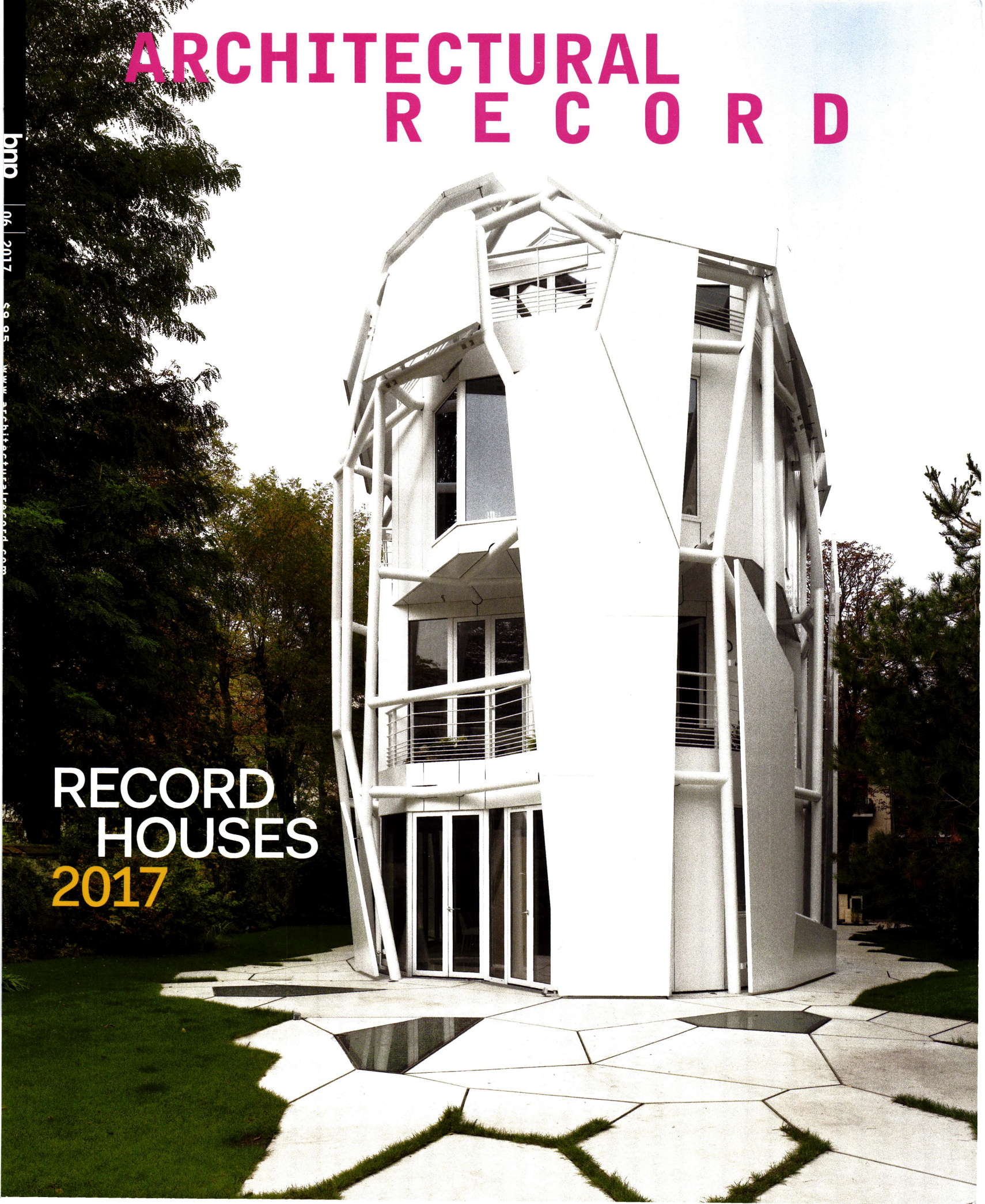
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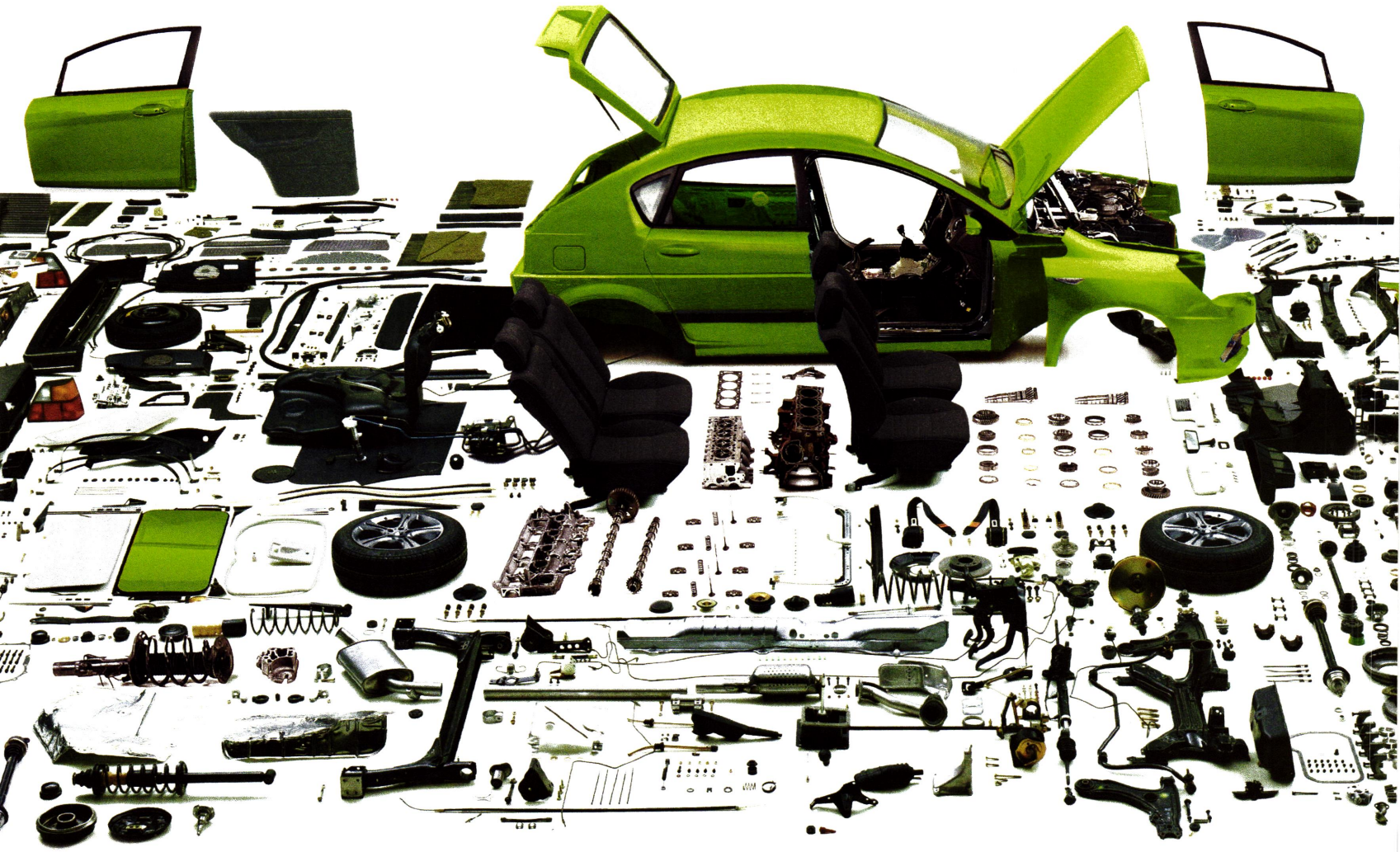


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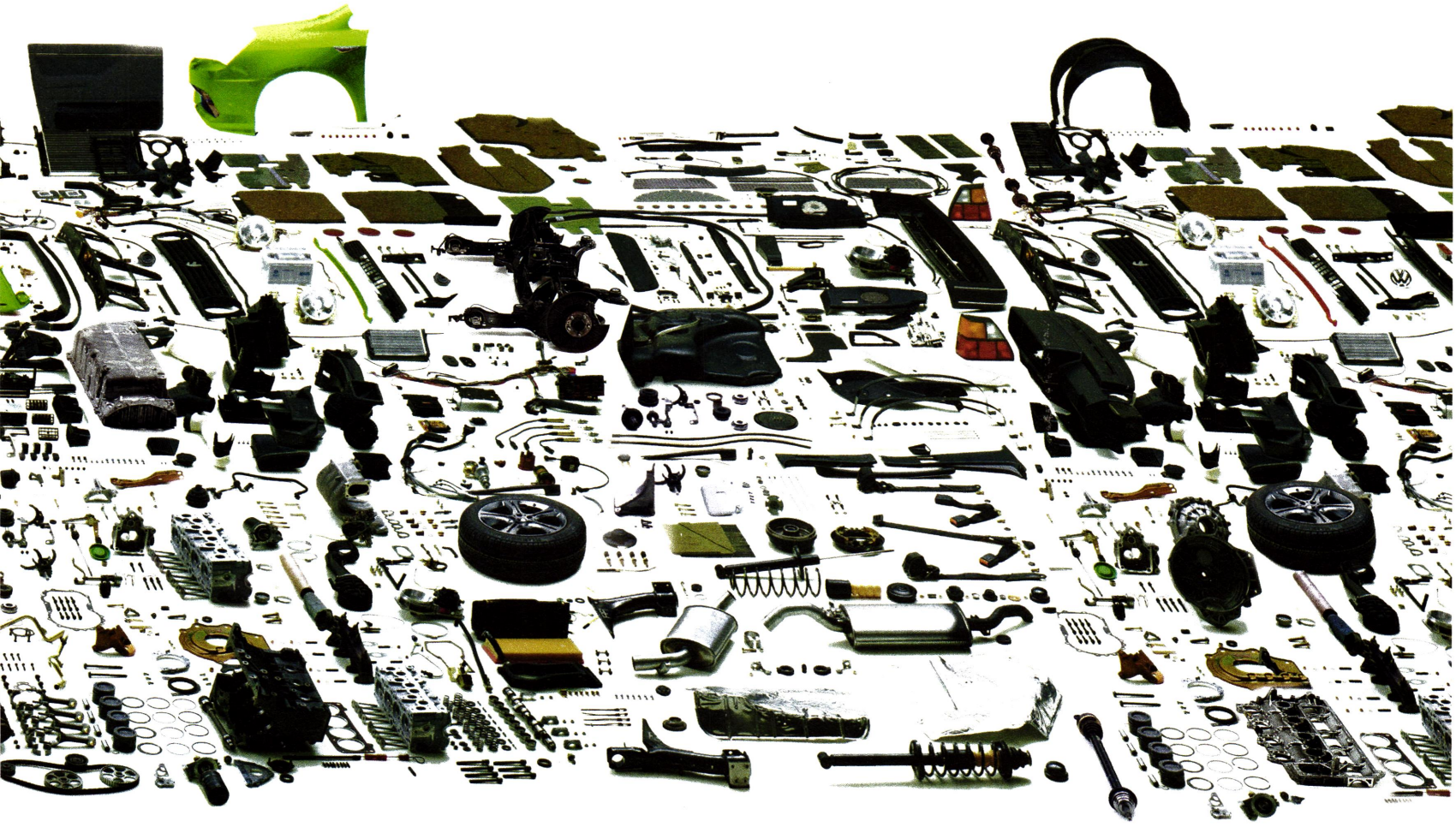
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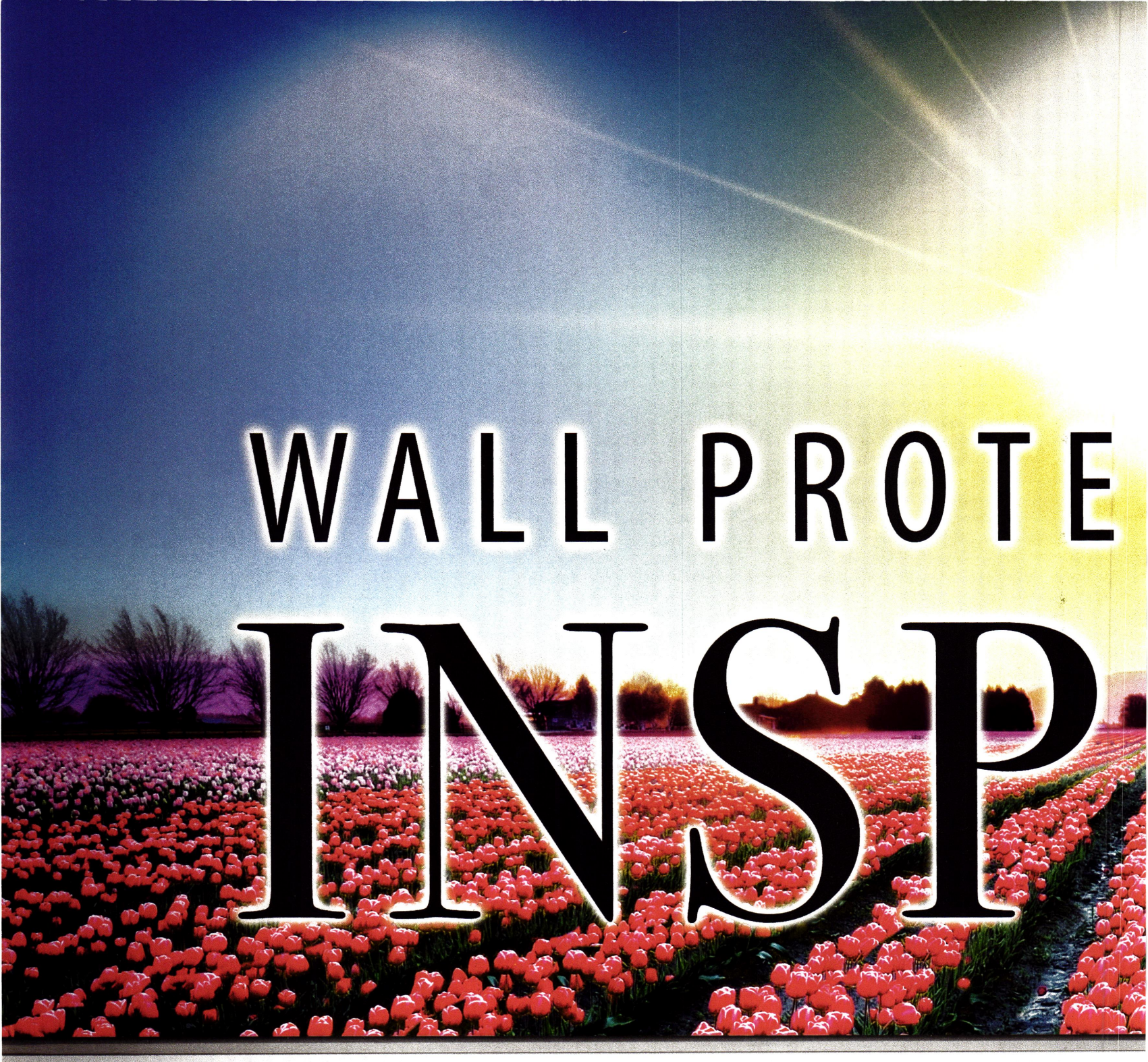
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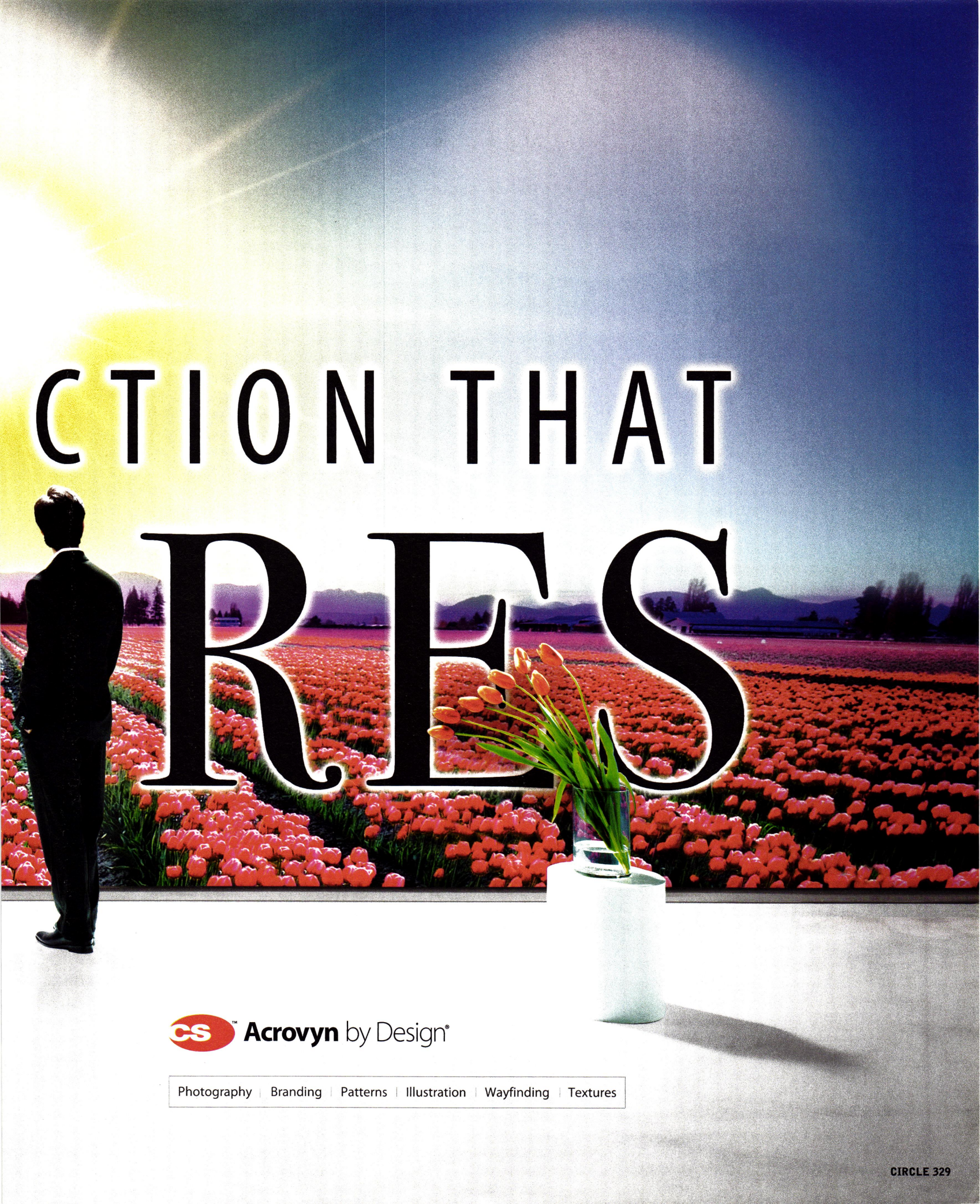
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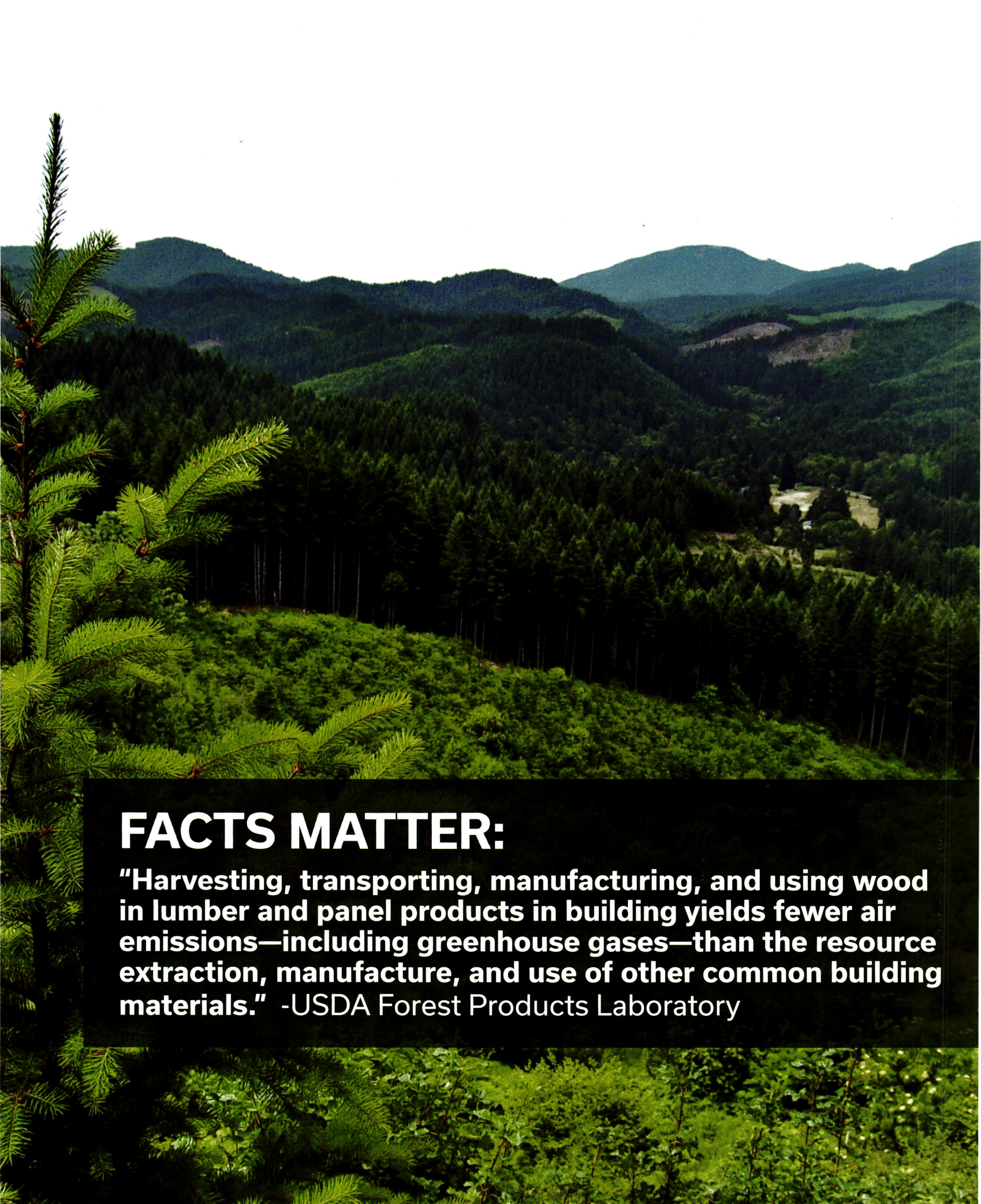
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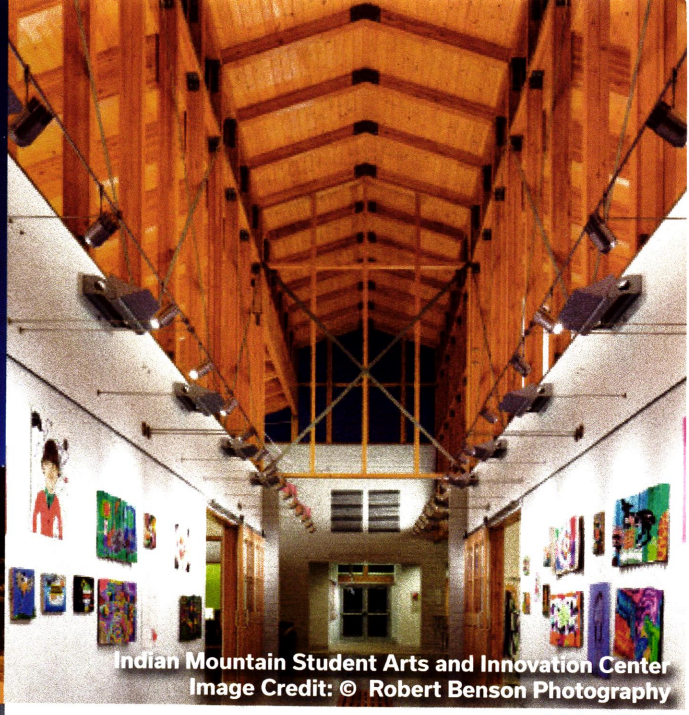


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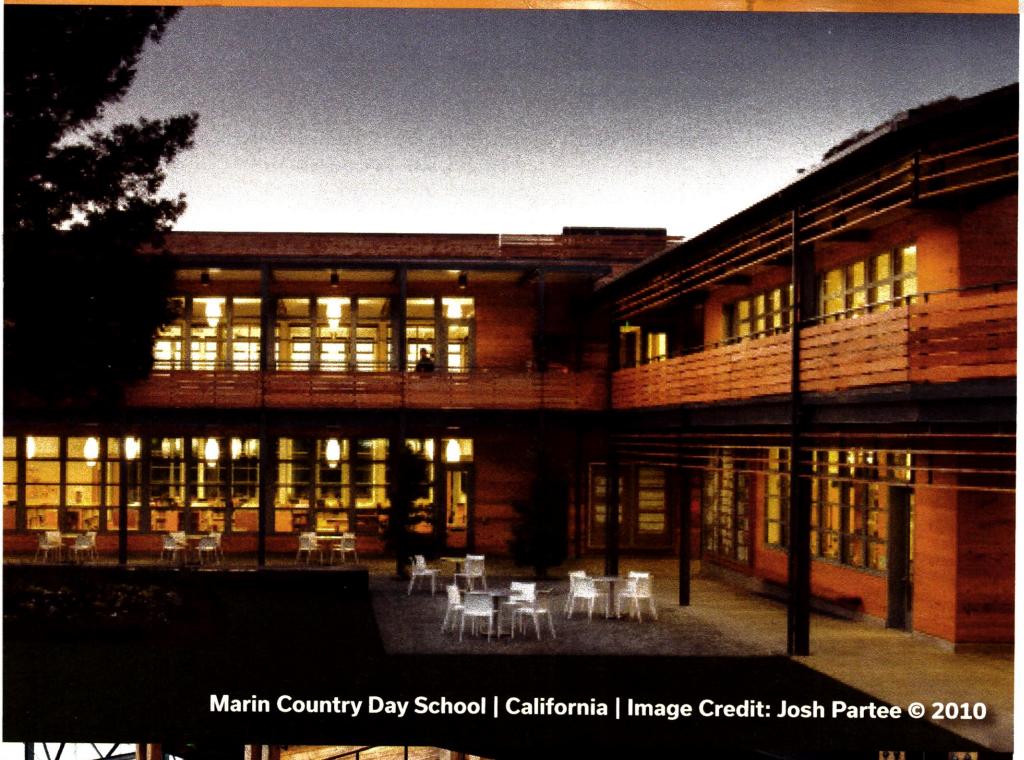
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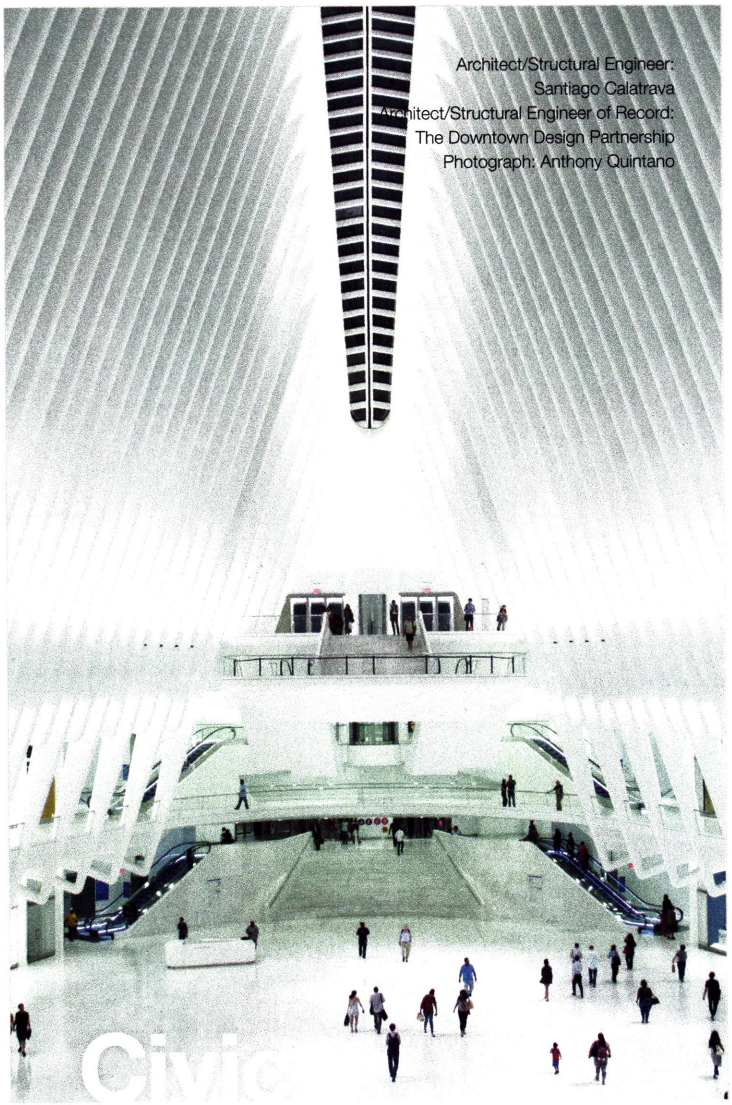
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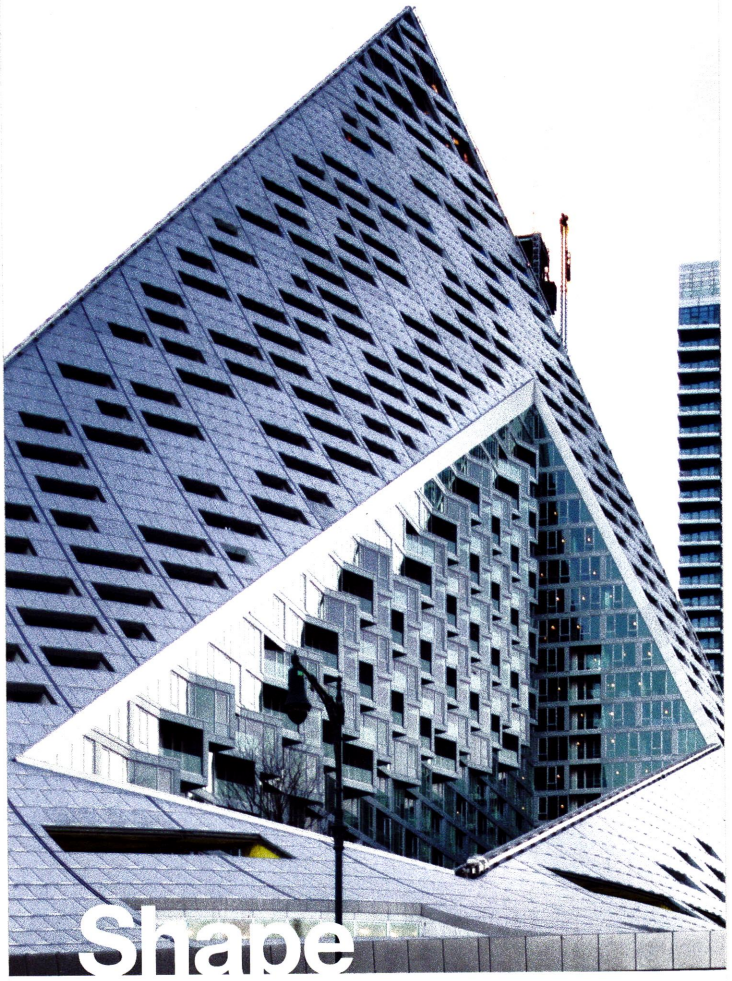
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Shape Up

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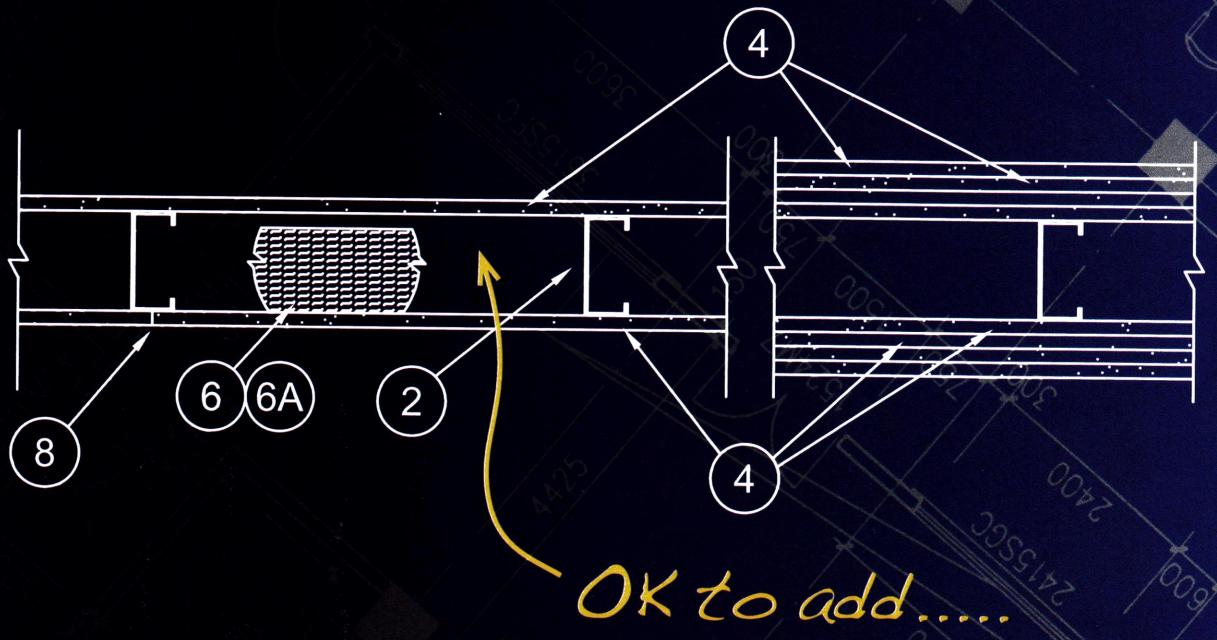
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PHOTO BY IWAN BAAN.

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PHOTO BY ROLAND HALBE.

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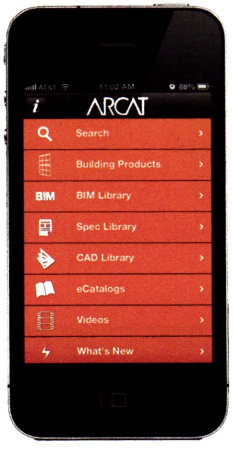
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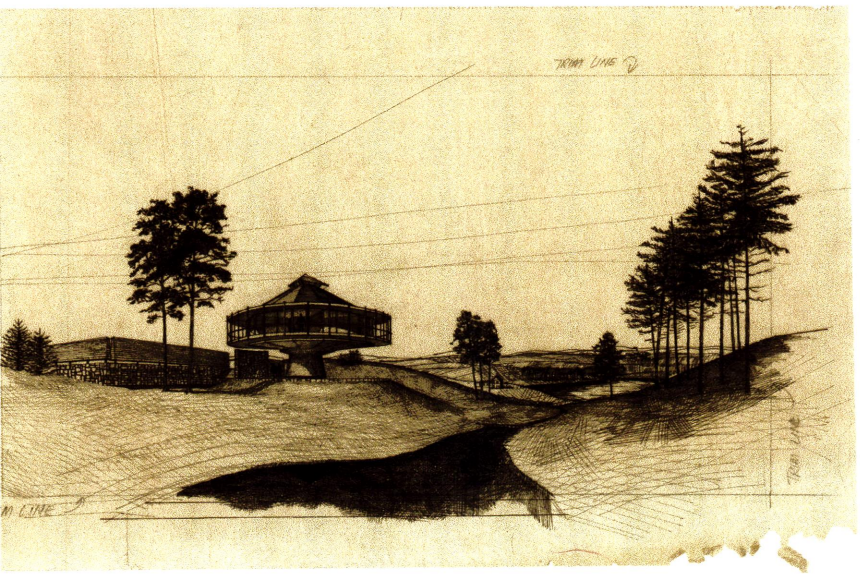
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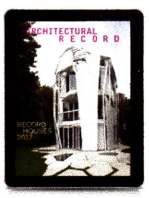


A SKETCH OF THE ROUND HOUSE

SPOTLIGHT ON NEWS

REMEMBERING DIANE LEWIS
Read our online obituary of the influential professor and sensitive practitioner, who died on May 2 in New York after a long illness.

SPEAKER BY DAVID ADJAYE AND MASTER & DYNAMIC
The architect collaborated with the New York–based audio brand on a wireless speaker, which launched in the middle of May. Read more about the design online in our product news section.



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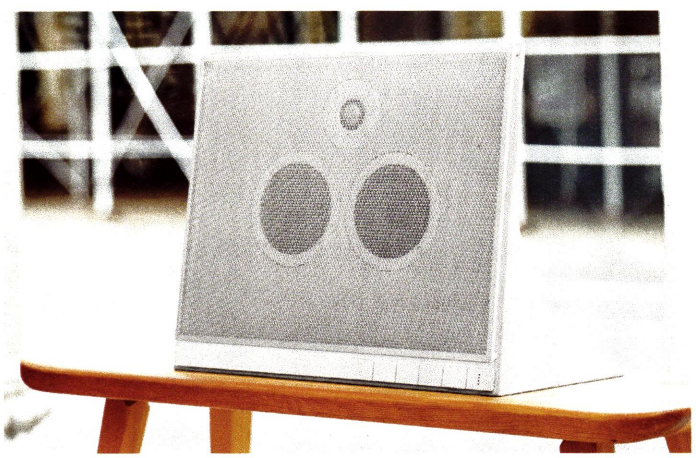
ROUND HOUSE ARCHIVES
The owners of Richard T. Foster's mushroom-shaped house in Connecticut are making original drawings and other materials related to the 1968 residence available online. Read our story about the recent renovation by Mack Scogin Merrill Elam Architects, then visit the digital repository.

LEVER ARCHITECTS DESIGN JOHN YEON EXHIBITION
The Portland-based firm, whose mass-timber Albina Yard project is featured in this month's Continuing Education article, designed a new exhibition at the Portland Museum of Art exploring the legacy of Pacific Northwest architect John Yeon. Click through images from the show.

INSIDE KAMIKATZ PUBLIC HOUSE
Take a look in and around this month's Snapshot by Tokyo architect Hiroshi Nakamura in our expanded slideshow.

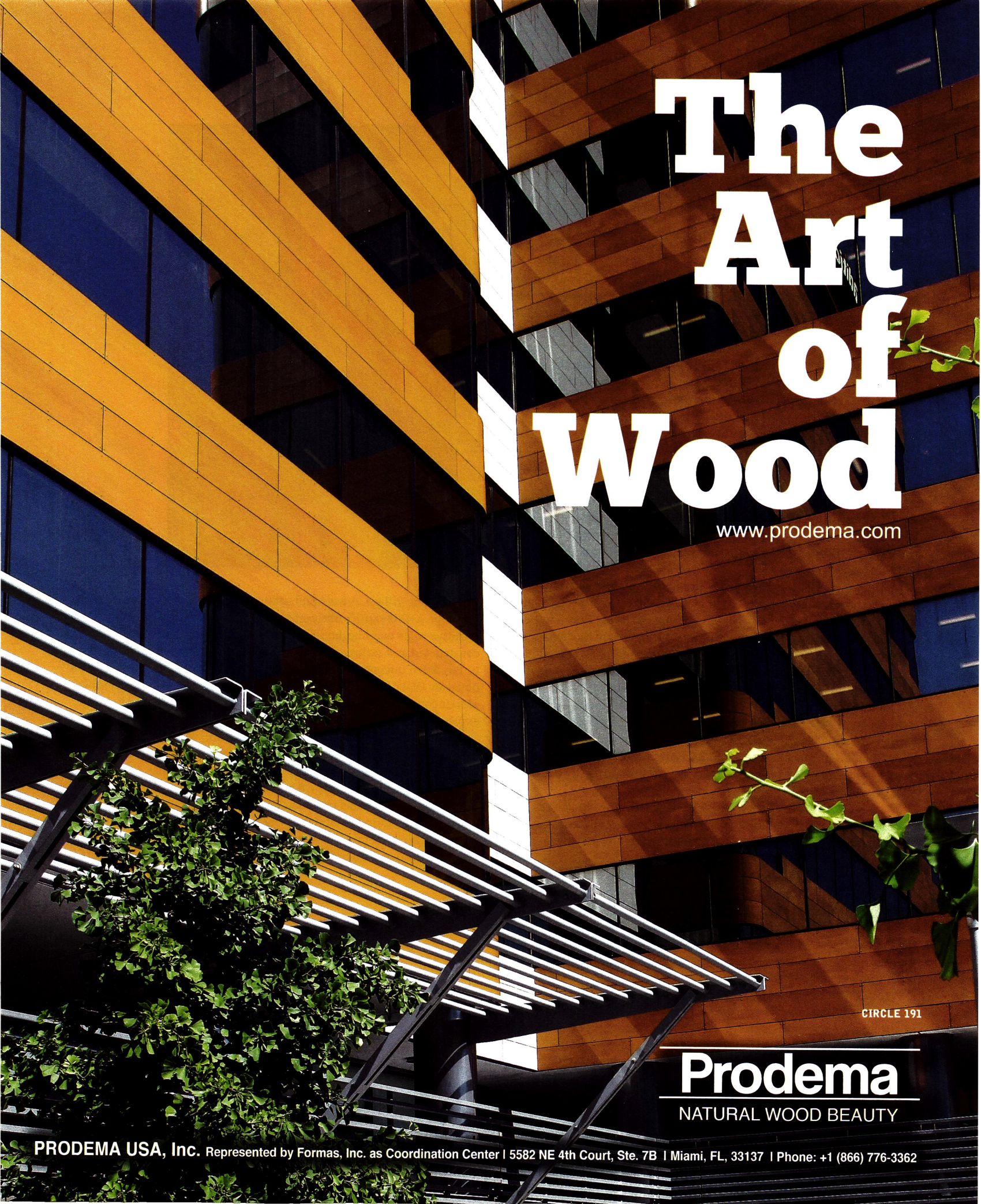


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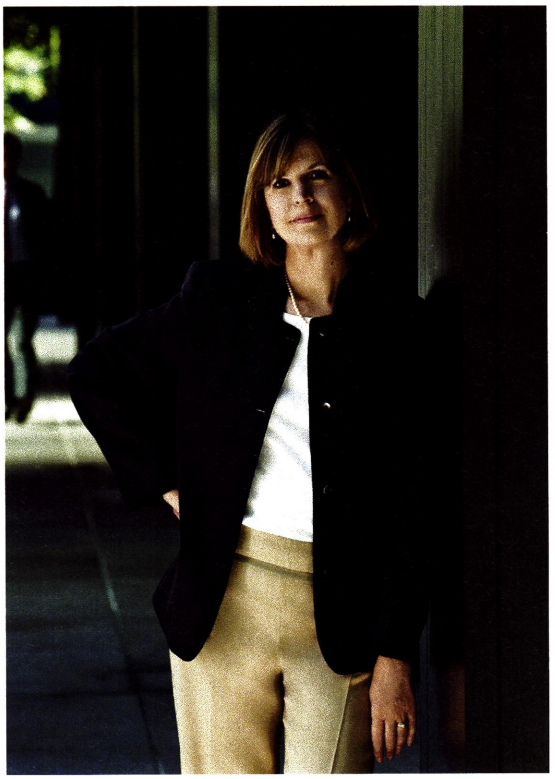
THE MA770 SPEAKER

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Being There

If you can get inside, houses by great architects usually defy your expectations.



WHEN I WAS SMALL, around 9 or 10 years old, my mother took me to see a house in our neighborhood in Ann Arbor designed by Frank Lloyd Wright. She was friends with the Palmers, who had commissioned the house from the architect in 1950—and it remained in the family for more than half a century. The brick and red cypress structure was beautifully tucked into a wooded rise, so it was hard to see the entire house from the road—its low-slung forms, with a deeply overhanging roof, were revealed as you walked toward it, crunching on the pulverized brick that Wright had specified for the driveway. The house, of course, was dramatically different from the split-level colonial we lived in nearby: inside, the open living room, dominated by wood, exuded a cozy warmth, with windows overlooking the leafy garden. As the guiding motif was the equilateral triangle, there were virtually no 90-degree angles in the place, and that included much of the Wright-designed furniture. The dining room table was rhomboid, and even the beds in the modest-sized bedrooms weren't rectangular. When we left, the first question I asked my mother was how Mrs. Palmer could possibly find sheets that fit.

My design queries have become a little more on point since then, but I learned to expect the unexpected in houses by great architects. Some turn out to be surprisingly small: Philip Johnson's Glass House in New Canaan, Connecticut, for example, or the Margaret Esherick House in Chestnut Hill, Pennsylvania, by Louis Kahn (one bedroom! tiny kitchen!). Others are embedded with drama. The stunning modernist home in Pacific Palisades, California, that Ray Kappe designed for his family in the 1960s is a light-filled flow of spaces that spill over multiple levels—many open to each other, without railings. Of course, even more vertigo-inducing is Paul Rudolph's extravagant penthouse on Beekman Place in Manhattan, with a total of 27 different levels, some barely bigger than a stair landing, carved out of a converted townhouse by the architect, beginning in the 1970s.

You have to experience such extraordinary dwellings in person, which is why RECORD, as usual, dispatched writers who went from Santiago to Seattle to report on the projects included in this month's issue, our annual collection of Record Houses.

One of them has an echo of Wright's Palmer house. Shigeru Ban's live/work dwelling for a client in Tokyo is also based on the triangle—from the shape of the lot to the triangular roof, with exquisitely detailed triangular motifs in ceilings made of both wood and concrete (page 80). For the Pritzker Prize–winner, known for humanitarian projects as well as museums and other building types, tackling residential architecture is a testing ground for new ideas.

A trend seen in several houses in the pages ahead is the design of clustered volumes, an effective device for breaking up mass and separating programmatic components. For Underhill House (page 86), a family residence on Long Island by Bates Masi Architects, a collection of mostly one-story shingled structures, planned around courtyards, reduces the impact of its 6,300 square feet, helping it to fit sympathetically into the surrounding village. A weekend getaway in northern California by Envelope A+D is significantly smaller (2,100 square feet) but similarly sensitive to its neighborhood—in this case, a forest. It was carefully constructed as a series of cabins on stilts, so that not a single tree had to be cut down during construction (page 74). On the island of Mallorca, a house by OHLAB for an older couple was designed as a loose assemblage of four connected boxes—cozy for the clients when they are alone but expansive when grandchildren come to visit (page 68).

These residences of scaled-down volumes are, in a way, in disguise—but no house is more enigmatic than Jakob + MacFarlane's Connected House: it sits like a deconstructed silo in a suburb of Paris and holds its secrets close to its chest (page 92). When deputy editor Suzanne Stephens (who oversaw this issue) visited it, she was astonished at how large the house turned out to be—and how the play of compressed and expanded spaces within a metal structure of planes and tubes made her feel as if she were inside a futuristic bird's nest. The experience of being there is everything.

Cathleen McGuigan

Cathleen McGuigan, Editor in Chief

PHOTOGRAPHY: © MICHEL ARNAUD

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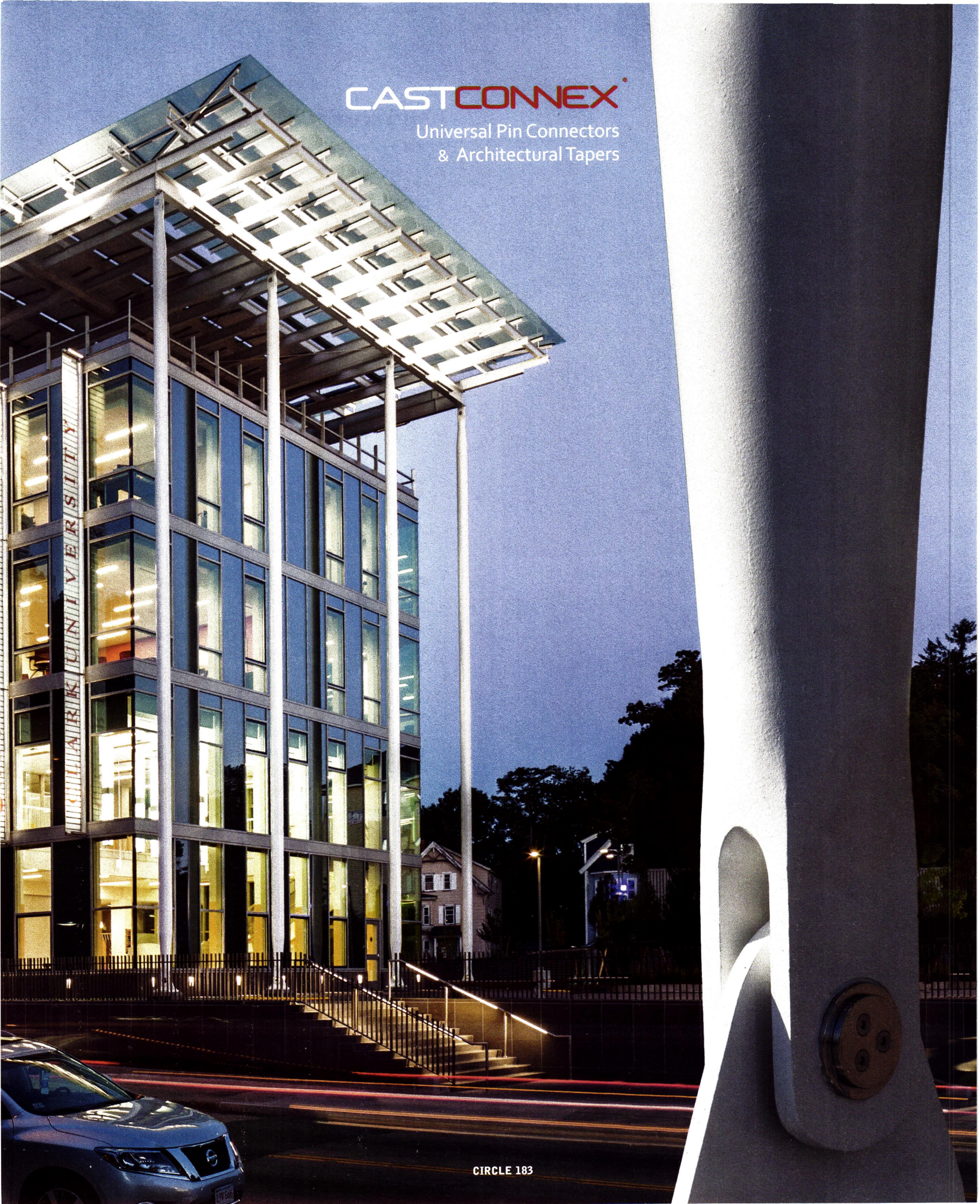
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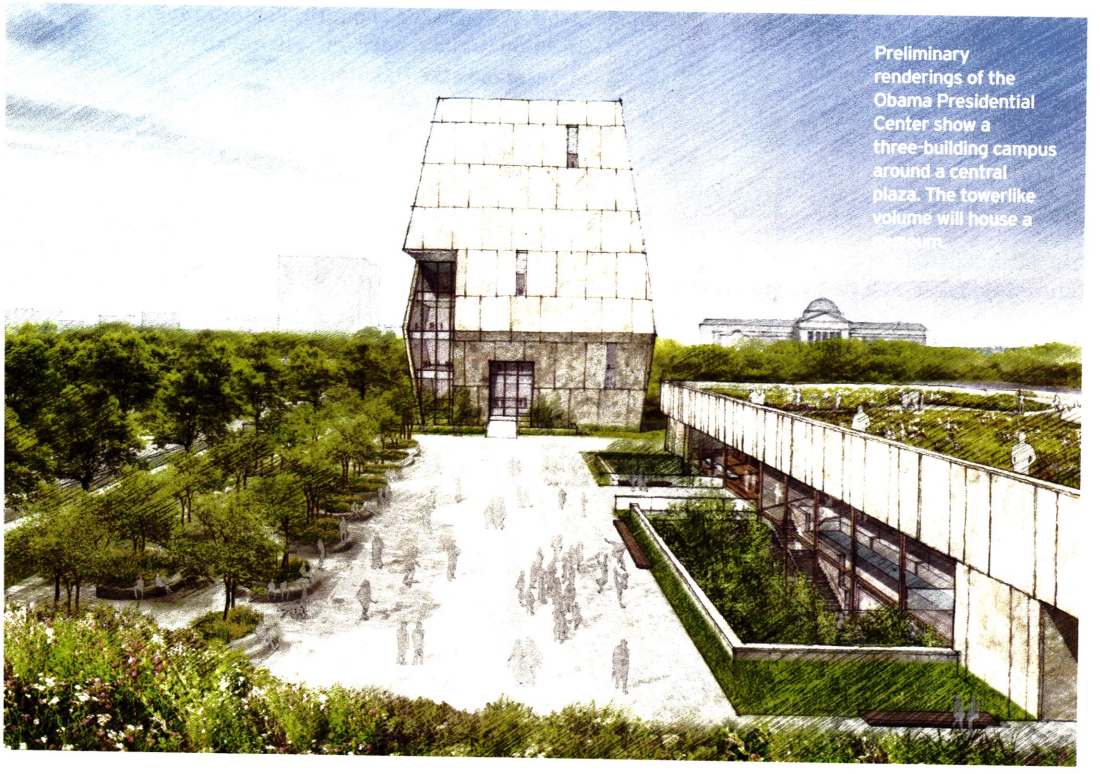
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CIRCLE 241

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perspective

The moral rules of a civilization are the springboard for being an architect. —*Architect and teacher Diane Lewis, who died May 2.*



Preliminary renderings of the Obama Presidential Center show a three-building campus around a central plaza. The towerlike volume will house a museum.

The Obamas Unveil Preliminary Design for Presidential Center

BY JAMES GAUER

ON MAY 3, at the South Shore Cultural Center on Chicago's South Side, Barack Obama presented the much-anticipated conceptual design for the Obama Presidential Center to an enthusiastic crowd of community stakeholders and press.

The event was billed as a "roundtable discussion," but the former President did most of the talking. Joining him onstage was Dina Griffin of Chicago-based Interactive Design Architects (IDEA), who is collaborating on the project with Tod Williams Billie Tsien Architects | Partners (TWBTA).

Site plans, a perspective drawing, and a model on hand at the presentation show a promising scheme sensitively incorporated into historic Jackson Park—an Olmsted and Vaux lakefront legacy of lawns and lagoons that hosted the 1893 World's Columbian Exposition. Three stone-clad buildings—a museum, forum, and library, connected below grade—form a campus around a plaza. The museum, which will be between 160 and 180 feet tall, is a distinctively canted mass with a cut-out glass corner, intended as the center's identifying landmark. Regraded topography and lushly planted roof terraces make the one-story library and forum volumes read largely as landscape.

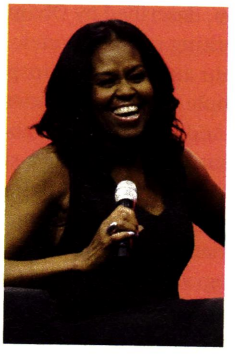
The museum will contain galleries, public spaces, offices, classrooms, and meeting rooms, while the forum will house an auditorium, a restaurant, and a public garden. The Obama Foundation is seeking community input for the programming of the library.

The total size of the center, expected to open in 2021 at a cost of at least $500 million, will range between 200,000 and 225,000 square feet, but the overall plans—designed with Michael Van Valkenburgh Associates, Site Design Group, and Living Habitats—will provide a net increase in green space, according to Obama.

Though Williams and Tsien were on hand offstage, along with Michelle Obama, the architects, surprisingly, did not participate in the presentation. Instead they stated in a release jointly issued with IDEA's Griffin, "The

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Michelle Obama Delivers AIA Keynote



LESS THAN a week before the design for the Obama Presidential Center was unveiled in Chicago, Michelle Obama was in Orlando as a keynote guest at the American Institute of Architect's 2017 conference—her first public appearance since leaving the White House in January.

"This project means the world to me," Obama said of the library. "We have been blessed to have architects who are thinking about what buildings mean in the lifeblood of a community."

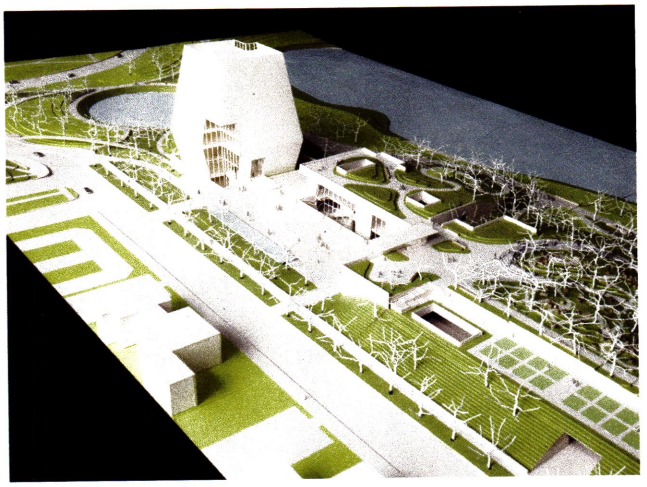
The architectural community, in particular, was a pivotal focus of her conversation with AIA president Thomas Vonier, who was candid about the profession's struggle to recruit and retain women and African-American architects. Obama was frank. "You can't be an architect if you don't know architects exist," she said, calling on the audience to mentor children as a means to raise the next, more diverse generation of architects and designers in a profession where young people of color lack role models. "You don't have to be first lady to influence," she said. *Anna Fixsen*

IMAGE: COURTESY OBAMA FOUNDATION (LEFT); © ARCHITECTURAL RECORD (RIGHT)

design approach for the center is guided by the goal of creating a true community asset . . . The Obamas were clear that they wanted the center to integrate seamlessly into [Jackson] Park and the community." (Neither TWBTA nor IDEA would comment on design specifics.)

The emphasis of the carefully scripted presentation was less on the eagerly awaited design than on shoring up local support for the center and defining its mission, described by Obama as "a working center for civic engagement and a place to inspire people and communities to create change."

Added Griffin,"It's about building a movement." There will be a strong focus on outreach to children and young adults, which the Obamas are supporting with a personal donation of $2 million to fund a summer jobs program. "We want to create an institution that will create the next generation of leaders," said Obama. "This will be not just a Presidential library, which we tend to think of as a monument to the past and a bit of an ego trip. Michelle and I want this to be about the future." He joked that he had agreed reluctantly to a museum "because, let's face it, we all want to see Michelle's dresses."



The model of the center (left) shows the effort to meld the campus with the surrounding Jackson Park, through a landscape designed by Michael Van Valkenburgh Associates.

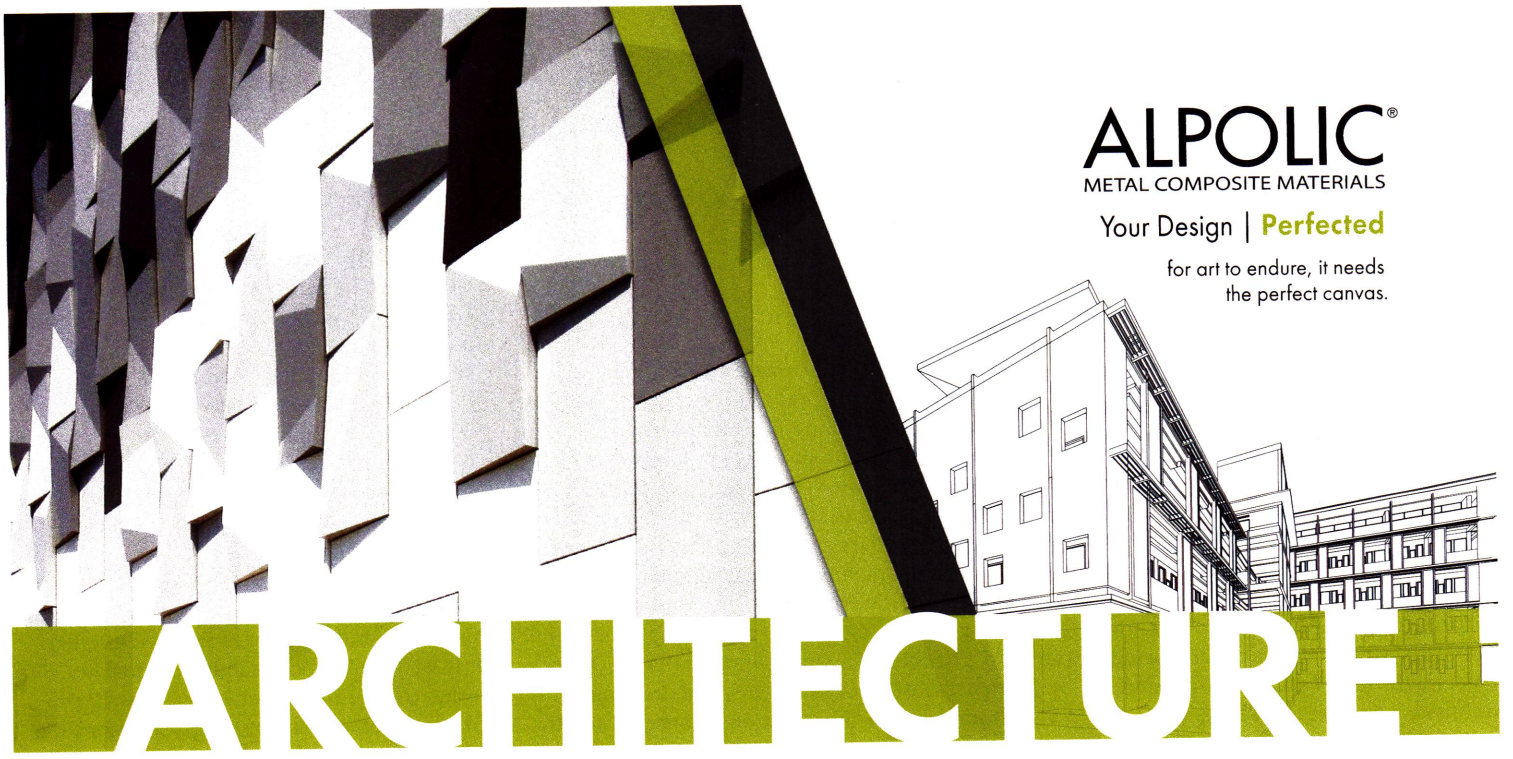
IMAGE: COURTESY OBAMA FOUNDATION

Still, the project has met some controversy. Residents in the surrounding Hyde Park, Woodlawn, and South Shore neighborhoods have voiced concerns that the foundation had not taken their worries about the displacement of people who currently use the park for recreation seriously (the site will occupy approximately 30 of the park's 542 acres) and that there was no "benefits agreement" to codify the community's share of jobs generated by the project.

There are also concerns about the design itself. When asked about the community's reaction to the renderings, Fifth Ward Alderman Leslie Hairston told RECORD, "There's a lot of excitement that the center will be so active and engaged. There are also concerns about the height of the museum and about traffic."

But at the design unveiling, Obama assured the audience that the scheme is a work in progress, stressing, "I want this to be a conversation."

The foundation estimates the economic benefit to the South Side will be $2.1 billion during construction and the first 10 years of operations. The audience cheered Obama's sly suggestion that, even though the center's location emerged from a formal selection process, the choice of Jackson Park—in the South Side community the Obamas call home—may have been a foregone conclusion. ■



CIRCLE 204

NYC Releases First Climate Resiliency Design Guidelines

BY BEN ADLER

NEW YORK CITY, a collection of islands with 578 miles of coastline, is taking a big step in preparing for climate change. Last month, the Mayor's Office of Recovery & Resiliency (ORR) released preliminary Climate Resiliency Design Guidelines for all of the city government's capital projects, from libraries to bridges. The recommendations will now enter a pilot phase before being finalized in December.

While President Trump has denied climate science and is removing many of his predecessor's climate-focused environmental regulations, highly vulnerable cities such as New York cannot afford to be unprepared. As Superstorm Sandy demonstrated in 2012, the population and economic activity threatened by more frequent extreme weather events is enormous. The new design guidelines are just one of ORR's efforts to fortify New York against climate change. It also is surrounding Lower Manhattan with parks that serve as flood barriers and constructing a series of protective breakwaters along the coast of Staten Island.

Building regulations have relied on historical data for temperatures or storm surges, but now New York will look ahead to future projections across four areas of climate risk: storm level surges, sea-level rise, higher temperatures, and escalating peak precipitation.

Those risks over the expected lifetime of new buildings, roads, parks, and other public infrastructure projects are significant. For example, according to the New York City Panel on Climate Change (NPCC)—an independent body of scientists formed in 2008 by then-Mayor Michael Bloomberg—by 2050, New York's average temperature is projected to increase between 4.1 and 6.6 degrees Fahrenheit. Last year, an article in the journal *Environmental Health Perspectives* found annual heat-related deaths in New York could increase by more than 500 percent by the 2080s.

But while the guidelines recommend features such as green roofs and lighter-colored, reflective surfaces to mitigate the urban heat island effect, they will not require any specific measures. "We're not being prescriptive about the strategy," says Susanne DesRoches, deputy director of infrastructure policy for ORR. "We want the design community to come back to us and say, This is how you can incorporate this climate data and resiliency."

The city is taking the same open-ended approach to preparing for other threats. For dealing with heavier storms—New York's rainfall is expected to increase by 4 to 13 percent by midcentury—the city will lay down permeable streets and build bioswales. But how exactly, say, a landscape architect might bring that information to bear on a new pocket park will be proposed by the designers and decided by the relevant agency on a case-by-case basis.

DesRoches and her colleagues worked closely with the city agencies responsible for actually building new projects, such as the Department of Parks and the Department of Environmental Protection, and they consulted the climate-change and resilience strategies already being employed in other coastal cities such as Boston and Miami. They also leveraged data produced by the NPCC's biannual reports that attempt to measure how the likely global average temperature increases and related effects will be manifested in New York. ORR used those local projections to draft the guidelines.

DesRoches says that, with these recommendations—which go beyond the building code required of private developments—"the city is really going to lead by example." The hope is that the private sector and other cities will follow suit. Climate change, and our understanding of it, is constantly evolving and so too must architecture and engineering. Says DesRoches, "This is what we see as a first step." ■





New York has released a preliminary set of design guidelines to protect city projects from the effects of climate change, especially in vulnerable coastal areas (above). Chief among the risks identified by the report is sea-level rise. New York's online Flood Hazard Mapper (left), for example, will help designers take into account both code and the rising waters of the future.

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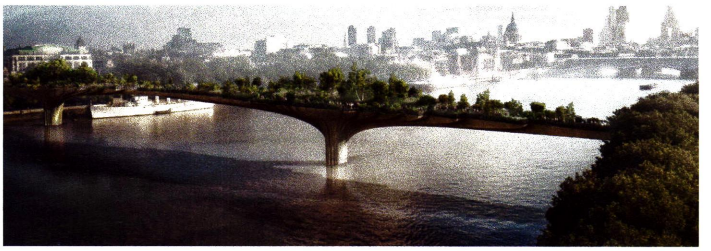
Two Major Heatherwick Projects Nixed

BY ALEX KLIMOSKI

WHILE CONSTRUCTION of the monumental Thomas Heatherwick–designed pavilion *Vessel* in New York's Hudson Yards began in April, plans for two of the British designer's highly publicized projects—Pier 55, a Manhattan event venue and park space on the Hudson River, and the Garden Bridge, a verdant pedestrian walkway over the Thames in London—have come to a halt.

In late March, a United States District Court judge ordered to vacate the building permit for the $200 million Pier 55 project, which is funded largely by media mogul Barry Diller and his wife, Diane Von Furstenberg. The ruling was in favor of the City Club of New York, an urban land-use advocacy group opposed to the project for its potential negative impact on wildlife in and around the river, a dedicated estuarine sanctuary. "It's rather heartwarming that, after all the work we have done, a judge has seen the light," says City Club president Michael Gruen. "Hopefully, the project is either moved to land or scaled down significantly."





The Garden Bridge in London (right) was planned to connect North and South London with a botanic pedestrian crossing. Pier 55 (below) was slated to replace a deteriorating pier and provide a performance space and public park on Manhattan's West side.

And in April, the mayor of London, Sadiq Khan, made clear that he would not sign off on the provision of funds needed for the $225 million Garden Bridge to move forward. In a letter to the chair of the Garden Bridge Trust, Khan cited the project's increased reliance on public money due to the Trust's "lack of progress" in private fundraising as the main reason for his decision. Members of the architecture community in the UK also objected to the lack of transparency in the process to procure Heatherwick, who won a competition to design the project. As reported by *The Architect's Journal*, Heatherwick met with former mayor Boris Johnson about the project before the contest was launched in 2013.

Heatherwick Studio declined to comment. ■

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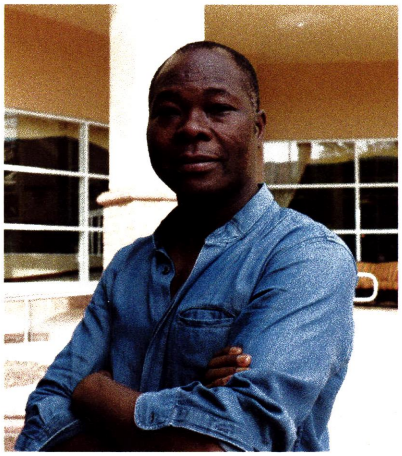
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[NEWSMAKER]

Diébédo Francis Kéré

BY ANNA FIXSEN AND MIRIAM SITZ

WHEN RECORD first interviewed Diébédo Francis Kéré six years ago (RECORD, January 2011, page 24), he spoke of his aspirations for his young–but growing–Berlin-based firm. These days, the Burkina Faso native is virtually everywhere. In the last year alone, Kéré has been the subject of a solo exhibition at the Philadelphia Museum of Art, proposed a new parliament building for his home country, and was awarded the Arnold W. Brunner Memorial Prize in Architecture from the American Academy of Arts and Letters. Later this month, the pavilion he designed for London's Serpentine Gallery will open, marking the first time an African architect has won the prestigious commission. RECORD sat down with Kéré at the 2017 AIA Conference on Architecture in Orlando, where he was the opening speaker, to discuss his recent and upcoming work.



Online, back in October, we ran a story about your plan for the parliament building in Burkina Faso. Is that happening?

It's an amazing project. The parliament president told me, "I love your design, and our country needs this in the center of our capital, but we have to see how to get the funding. If I could, I would start to build it with you tomorrow." The country is coming out of a very hard time–30 years of corruption and a revolution. The design has launched a debate about how symbolic buildings like a parliament house should look. I thought, we have to consider what is important for Burkina Faso. And so that was the idea with the pyramid–it's transparent and has a garden space, so the people can really engage with it.

What do you have going on in Berlin?

I was asked to design a theater for Volksbühne, a 100-year-old theater company. The new director, Chris Dercon, wants to open the theater to the world, so I designed a satellite theater in a hangar [at Berlin Tempelhof Airport]. This particular airport is very important, because, during the cold war, the U.S. used it to bring food to people in Berlin.

So now, putting a theater for 800 to 1,000 people inside of it, I said, "Can I drill?" No! "Can I hang things?" No! It's all historically protected. Instead, I thought, let's create a movable thing. All the seating can be moved like an accordion, and the stage can be used for different purposes. We'll put wheels on the entire structure, to move the whole thing outside, as you would move an aircraft. The moving out becomes theater in itself.

Also, there are Syrian refugees staying in some of the hangars nearby. They can't leave, so it's difficult for them to make relationships and connections. I thought, if we move the theater out of the hangar and bring everyone together in front of it, we'll get the refugee and the Berliner to connect–the new citizen with the existing citizens. People loved that idea.

It sounds as if it captures the zeitgeist. When will construction start?

We're waiting on the financing from the state. It's not easy.

Anything else happening now in Germany?

There's a church and community in Muenster, too. An old military barracks. It's still in the competition phase, but it's looking good. We won the master plan a couple of years ago. Cross your fingers.

With the Serpentine Pavilion coming up, this is a big moment for you!

Yes, it is a great honor. But the pressure's great too, because you have to succeed. Look at who has been there before me! [Zaha Hadid, Oscar Niemeyer, Frank Gehry, and others.] When I discovered that I won, I was like, *c'est pas moi!*–it's not me! They said, "Yes, you."

Are you traveling to London often, then?

Yes, I have been there several times already for fabrication, discussion–and we went through fire tests a lot.

Fire tests?

Yes! The structure has to stand. A crowd will come there, so it has to be secure.

Are you going to meet the Queen?

That would be a dream–which I don't think will come true.

Do people from your hometown in Burkina Faso want to be architects now? Do they want to go to architecture school?

Friends have told me that kids say they want to be "Francis." So I am a profession. It's wonderful. ■

noted

Louvre Abu Dhabi to Open in November

The *Art Newspaper* has reported that–if all goes according to plan–the much-awaited satellite of the Louvre will open this fall in Abu Dhabi. Finishing touches are being made on the Jean Nouvel–designed building, and, according to internal memos, the Louvre in Paris is preparing to send numerous artworks to the museum this summer. Officials originally anticipated that the museum would open in 2013.

Vito Acconci, Artist and Designer, Dies

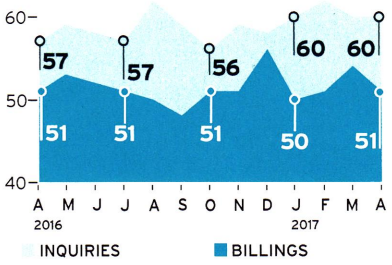
The pioneering performance artist, poet, and designer Vito Acconci died April 28 in Manhattan. He was 77. Though Acconci was known for the mark he left on New York's art scene, he turned to architecture in the mid-1970s, designing idiosyncratic public works such as a floating pavilion in Vienna and the facade of the Storefront for Art and Architecture with Steven Holl.

ELEMENTAL Wins International Competition for Qatar's Art Mill

Alejandro Aravena's Chile-based firm has won an international competition to design Art Mill, a new museum housed in a former bread factory on the waterfront of Doha, Qatar. Selected from a list of 26, ELEMENTAL's concept pulled inspiration from the site's grain silos and industrial history.

David Adjaye Makes *Time* 100

David Adjaye was the sole architect on *Time*'s annual list of the world's most influential people. The magazine called the British-Ghanaian's work "deeply rooted in both the present moment and the complex context of history."



ABI Posts Three Straight Months of Growth

For the third consecutive month, the Architecture Billings Index (ABI) has seen promising growth, according to the AIA. The April score, though lower than the prior month, scored 50.9. (Any score above 50 indicates an increase in billings.) New-project inquiries scored 60.2, up 0.4 points from March. AIA economist Kermit Baker calls this new-project growth "exceptionally strong."

PHOTOGRAPHY: © ARCHITECTURAL RECORD

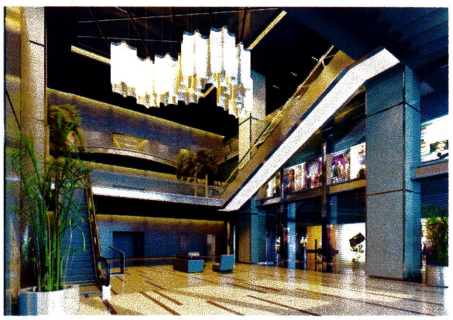

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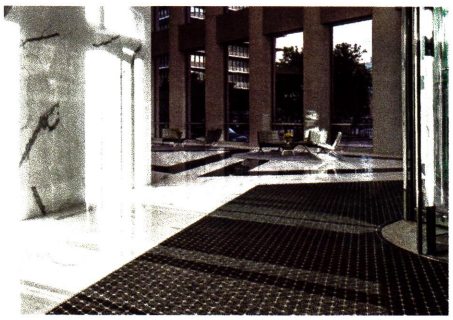
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Photo courtesy of Construction Specialties



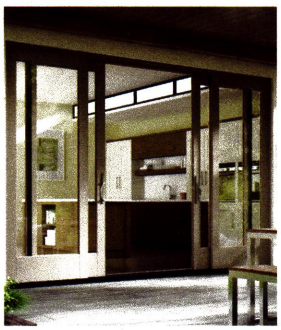
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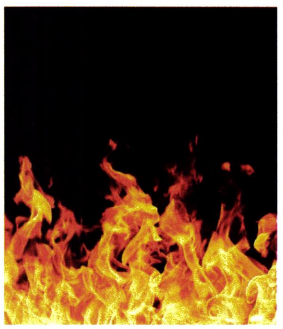


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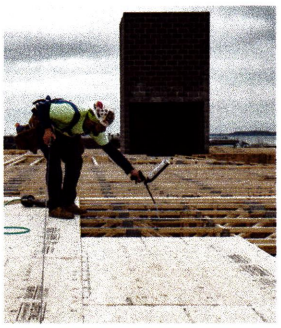
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Overcoming Structural Floor Squeaks in Wood-Framed Construction

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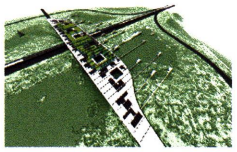


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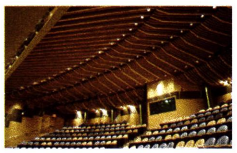


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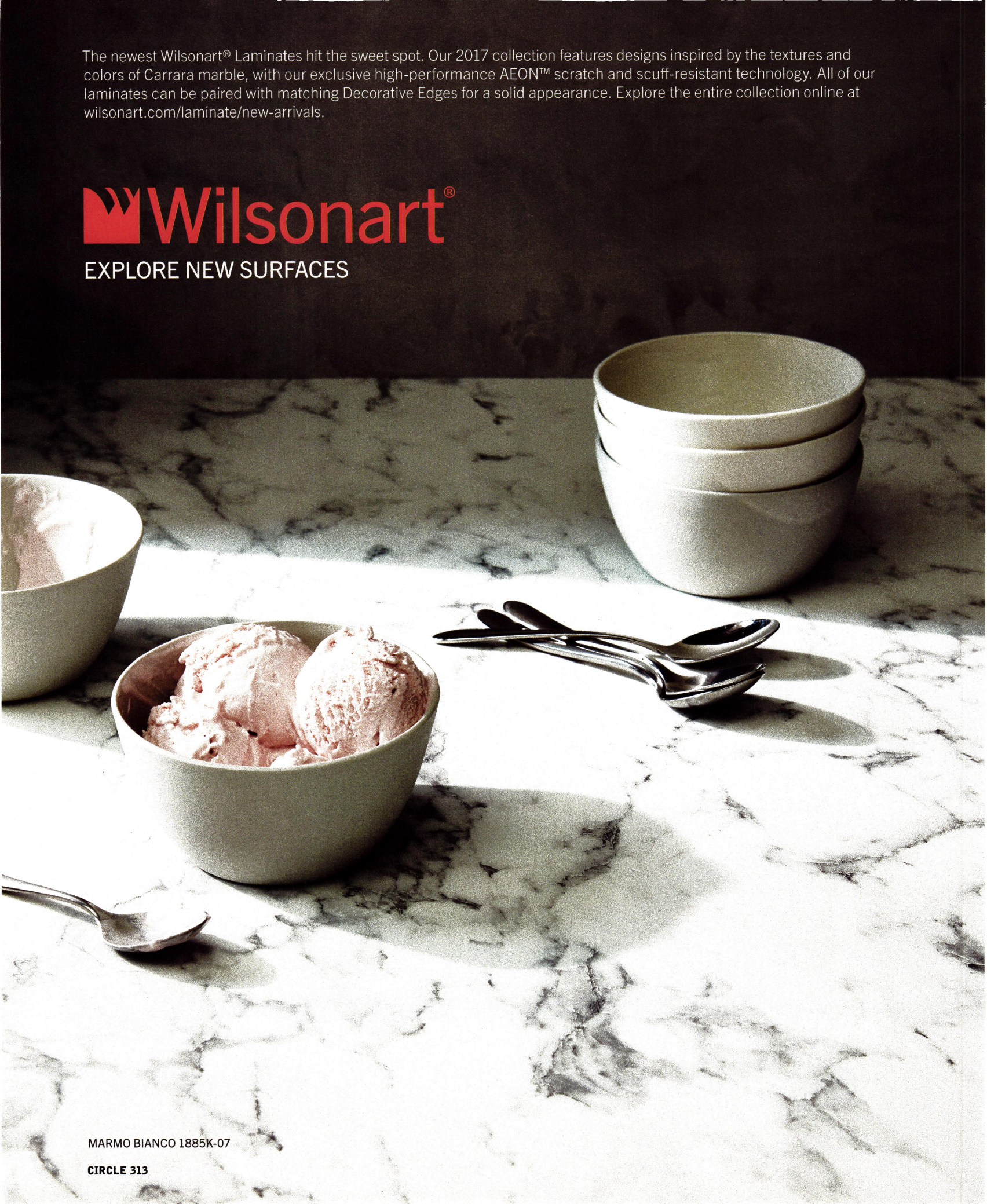
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perspective**interiors**

A STUTTGART-BASED ARCHITECT REFERS TO THE MASTER TO CREATE A PIED-À-TERRE IN BERLIN'S CORBUSIERHAUS. **BY MARY PEPCHINSKI**

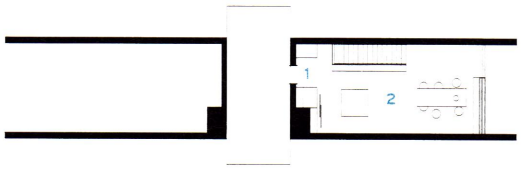
IN 2014, when a through-floor duplex on the 15th and 16th levels of the Corbusierhaus in Berlin was offered to Stuttgart-based architect Joerg Aldinger, a fan of Le Corbusier, he purchased the unit sight unseen. But, although the block stands in a leafy, low-rise neighborhood roughly eight miles from the city center, Aldinger's first visit to his unit was a letdown. Unlike the double-height apartments in the first Unité d'Habitation in Marseille, all of the studio and duplex residences in the Berlin version are single-height—a strategy adopted to maximize rentable space when the block was built in 1957. Moreover, this apartment's previous owner had decorated with shrill colors and sharply-angled built-ins. Spatial complexity, careful proportions, and rich materials were nowhere to be seen.

The transformation of the 1,190-square-foot duplex into a weekend getaway for himself, his wife, and their 8-year-old son was difficult, says Aldinger. "Because Le Corbusier is such an Übervater [a dominant father figure], you always feel he is looking over your shoulder." So instead of imposing another design philosophy, Aldinger selectively applied ideas from the Swiss-born master's work to fashion an atmosphere that would suit its provenance.

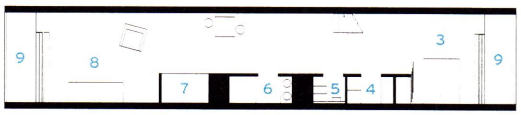
To lend the 13-foot-wide unit a feeling of spaciousness, Aldinger embraced a *plan libre*. He ripped out partitions, removed the wall enclosing the staircase, and exposed the ceiling beams on the lower level. He then used matte slate-gray sliding panels to define a bedroom east of the stairs and, on the level above, enclose a small entry vestibule opening onto the kitchen/dining area.

The architect devised strategies to draw attention to the city views unfolding via Corbusier's articulated elevations. On the 16th floor, a recessed exhaust vent in the stainless-steel surface of the kitchen island keeps the ceiling unobstructed and preserves the clear vista of downtown Berlin. On the 15th floor, a bathroom, half bath, laundry, and a sleeping niche occupy a 4-foot-deep band hugging the south wall. This compact arrangement frees up the 65-foot-long space between the eastern and western facades and directs one's gaze to the panoramas unfolding beyond.

To evoke the warmth of *béton brut* concrete, Aldinger selected a muted palette from Corbusier's *polychromie architec-*



SECOND-LEVEL PLAN



FIRST-LEVEL PLAN

0 10 FT
3 M.

1 ENTRANCE
2 KITCHEN/DINING AREA
3 BEDROOM
4 LAUNDRY
5 HALF BATH
6 SHOWER/ WASHROOM
7 SLEEPING NICHE
8 LIVING AREA
9 BALCONY





To lend a feeling of spaciousness to the 13-foot-wide duplex (above) on the 15th and 16th floors of the Corbusierhaus (left), architect Joerg Aldinger eliminated the original partitions, exposed the stair and ceiling structures, and placed a laundry, bathrooms, and a sleeping niche in a 4-foot-deep band along the south wall.



The architect used a select material palette, including honey-toned oak for the stair treads (bottom, left) and table in the kitchen/dining area (bottom, right), where he employed matte black-stained MDF for shelving. The same MDF reappears as shelving and bed in the sleeping niche (left).





turale. The north wall of the apartment features a soft Zürich white, while dark and light shades of *terre d'ombre* appear on the south, and flint-gray linoleum covers the floor. Other finishes include taupe-toned mosaic bathroom walls, not unlike those on Villa's Savoye's iconic reclining bath, and a satiny black steel stair structure and handrail.

The most surprising aspect of this interior is its ability to highlight the daily rhythms of the city. The darker and cooler palette found on the eastern ends complements both the freshness of the sunrise and the views of Berlin's nighttime skyline. Softer and warmer tones appear on the lower level's west end, and they harmonize with the late-afternoon sun as it floods the interior or bathes the sprawling western suburbs in a fiery light.

Against the backdrop of these gentle hues, it is the carefully placed traces of everyday life, some prosaic, others less common—dining room chairs by Harry Bertoia and Jean Prouvé, a vintage semi-electric acoustic Pevey jazz guitar on a stand, a child's possessions, or crockery arranged in the built-in black-stained MDF-panel shelving—that keeps the spirit of LeCorbusier most in place.

Completed in 2016, the renovation has given Aldinger a new perspective on Le Corbusier's architecture. "He has become part of my daily life," he says. "Now I feel he was just another architect—although quite a bit better than the rest." ■

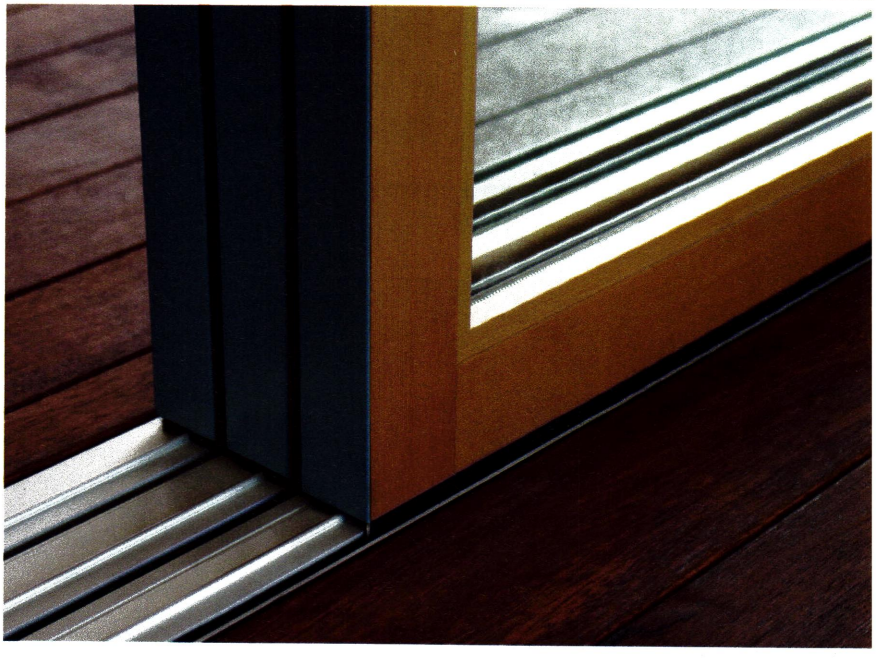
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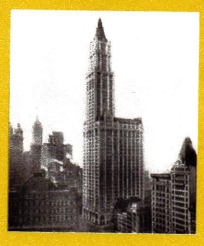
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The architect for the Woolworth Building in New York (1913) was **Cass Gilbert.** In RECORD's pages, critic Montgomery Schuyler commended the 792-foot-high skyscraper, the tallest in the world at the time, for expressing the steel frame through its terra-cotta skin, and for imparting a sense of scale by its use of a Gothic-style vocabulary.

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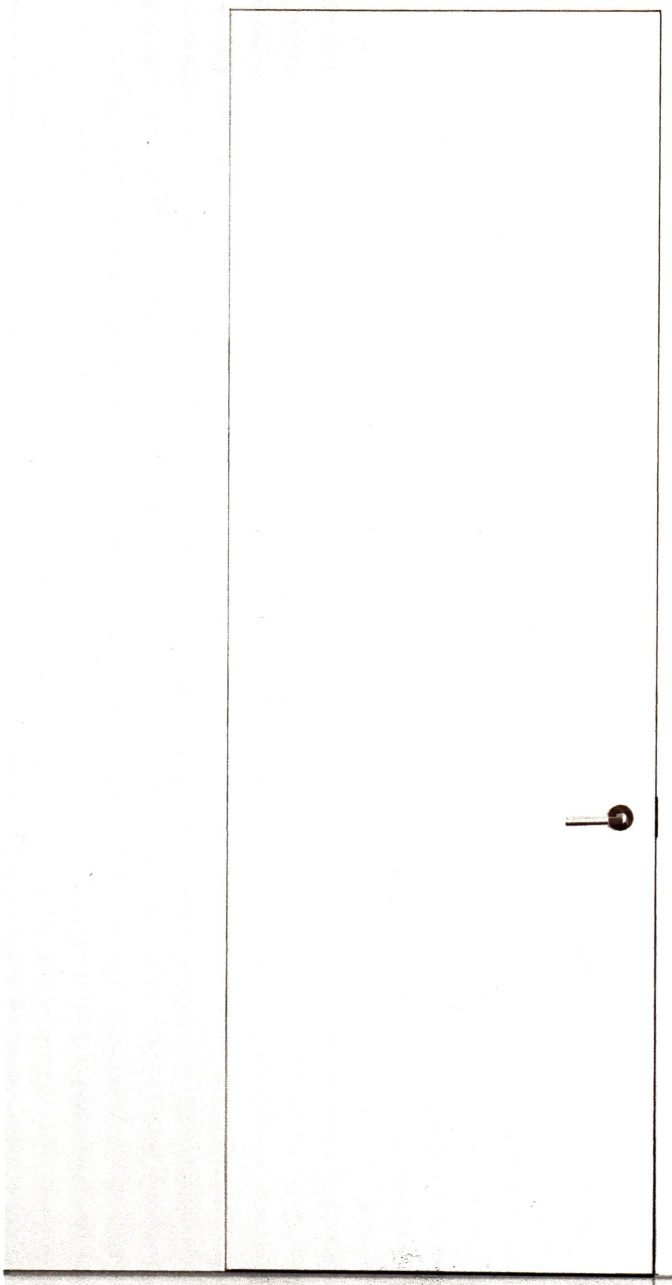
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CIRCLE 246

A Fresh Spin

A pair of architects and a dedicated client bring an unconventional 1960s-era dwelling into the 21st century.

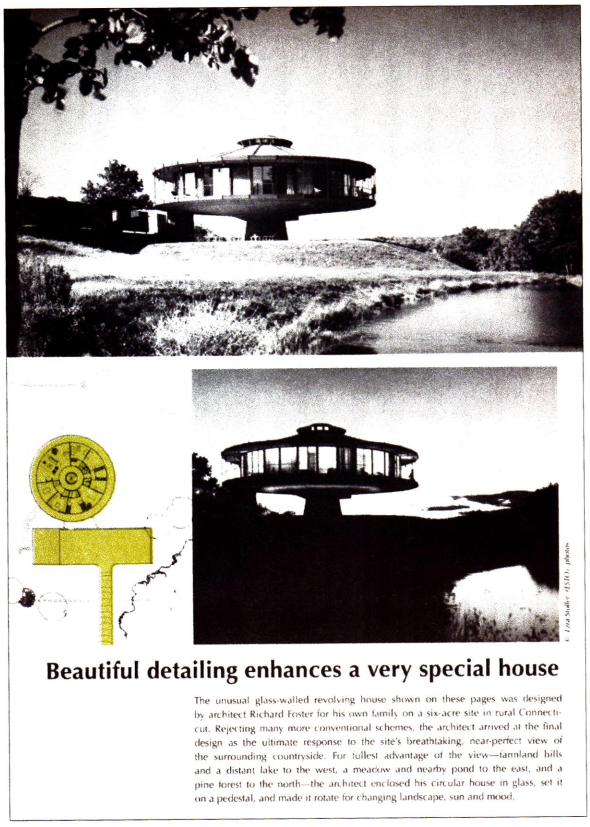
BY ANNA FIXSEN
PHOTOGRAPHY BY IWAN BAAN

ARCHITECT RICHARD T. FOSTER caused quite the stir when his mushroom-shaped house sprouted out of the rural Connecticut landscape in the spring of 1968. Not only did the structure resemble something from the *Martian Chronicles*, it rotated in both directions atop its trunk-like pedestal. When *The New York Times* asked Foster—a protégé of Philip Johnson—why such residential designs had yet to catch on, he shrugged: "Look how long it took man to get out of the cave."

Nearly half a century later, Foster's Round House—floating over the landscape like a marooned spacecraft—still feels thrillingly radical. But when Judd Tully, an art critic, and his wife, Rea, purchased the house in 2010 as a weekend getaway, it became clear that it required some upgrades. The Tullys turned to Atlanta-based architects Merrill Elam and Mack Scogin to breathe new life into their unusual home.

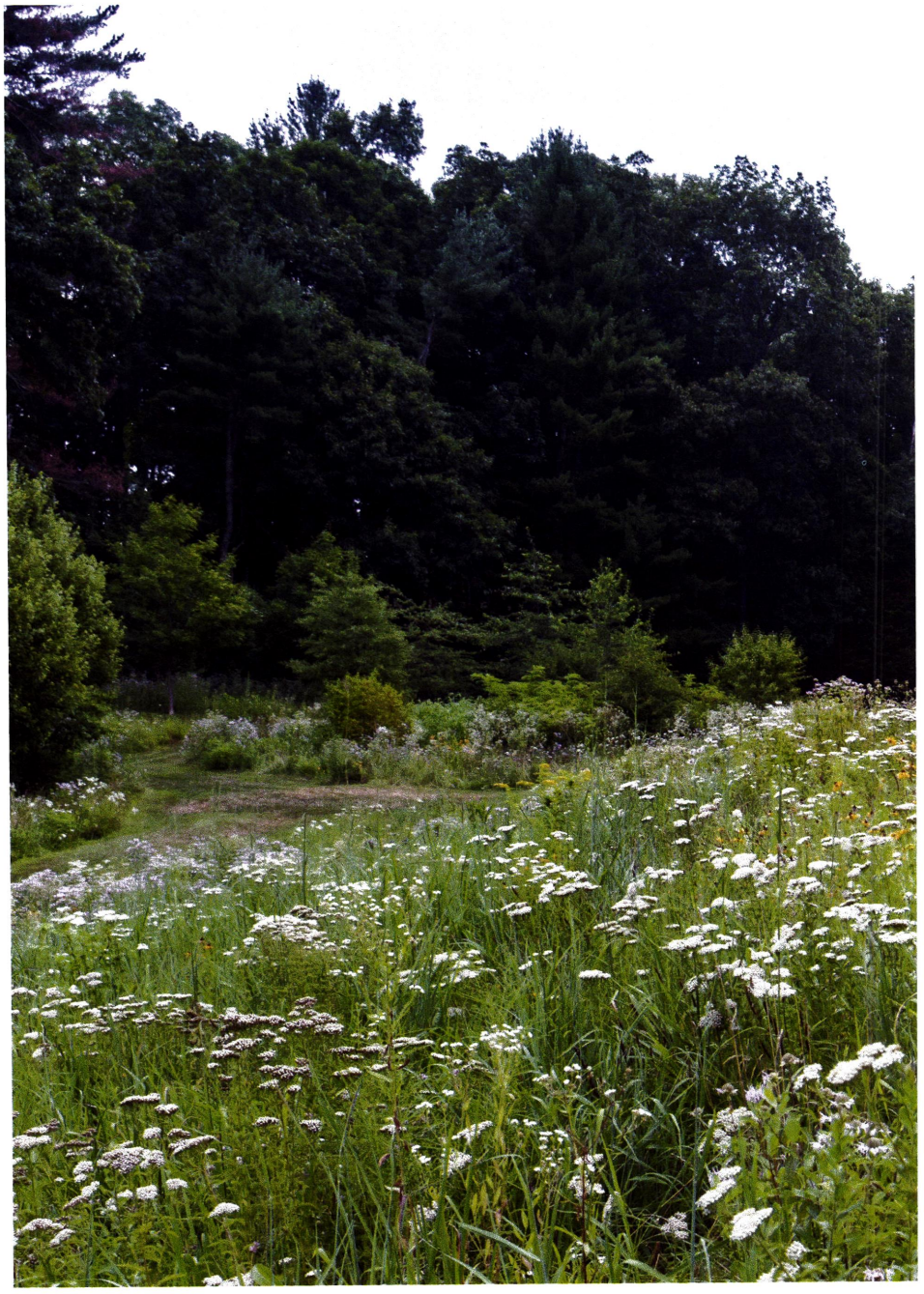
"Our initial thought was, whoever buys a round house that moves has to be very interesting," says Elam.

They also may want to stock up on Dramamine. Foster's 500,000-pound house rotates around a fixed, 9-foot-tall spiral concrete stair using a 3-ton ball bearing assembly. The



Beautiful detailing enhances a very special house

The unusual glass-walled revolving house shown on these pages was designed by architect Richard Foster for his own family on a six-acre site in rural Connecticut. Rejecting many more conventional schemes, the architect arrived at the final design as the ultimate response to the site's breathtaking, near-perfect view of the surrounding countryside. For fullest advantage of the view—farmland hills and a distant lake to the west, a meadow and nearby pond to the east, and a pine forest to the north—the architect enclosed his circular house in glass, set it on a pedestal, and made it rotate for changing landscape, sun and mood.



72-foot-diameter upper volume relies on an umbrella-shaped steel structural system and—unlike revolving restaurants of the period—an ingenious scheme of concealed trolleys and troughs that allow the plumbing, electric, and water connections to pivot with it.

The machinery may be complex, but the user controls the house with the push of a button on a shoebox-sized control panel. Relying on just a 1.5 horsepower motor, the house can revolve up to 5 feet per minute. For the unaccustomed, it can feel a bit like traversing the deck of a ship.

In spite of the home's revolutionary nature—both literally and figuratively—little daylight from the 360-degree windows penetrated its center. "It was a little melancholy," says Scogin, a sense amplified by Foster's strict adherence to a radial floor plan, so that rooms surrounded the stair core like pie slices.



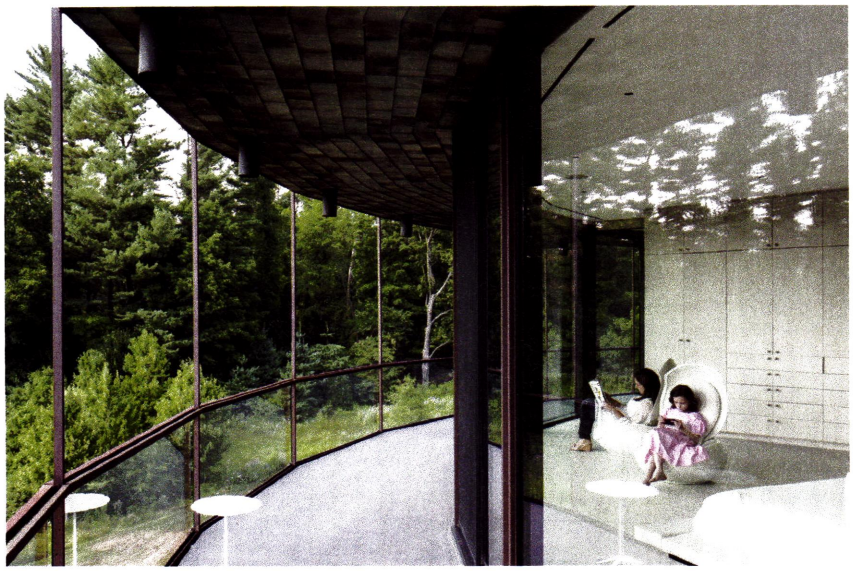
Scogin and Elam sought to "soften" the house by breaking up the geometries and by bringing nature into the interior. This begins as soon as one ascends the spiral stair in the house's "trunk." The architects built a low wall around the floor opening so that—like a stage curtain prepped for a big reveal—a visitor's first views are out to the undulating landscape, not the terrazzo floor.

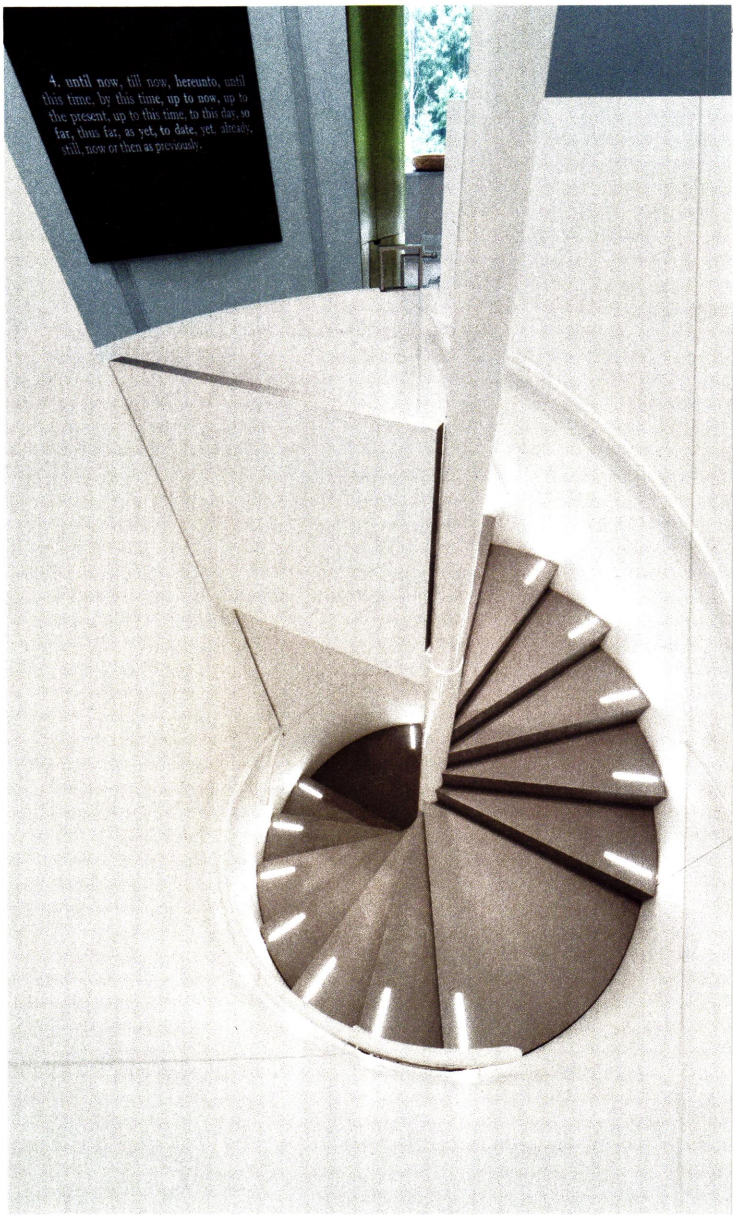
From the stair, one can access the living room, the kitchen, the master bedroom suite, or the children's room—depending on where the house is in its orbit. A previous renovation eliminated a wall to unify the kitchen and living areas, but the architects also opted to remove additional partitions to allow for a more generous master bedroom suite and a larger bedroom for the Tullys' 10-year-old daughter.

Crucially, the architects incorporated reflective surfaces throughout so that views of the countryside are visible even when looking inward. Just off the kitchen, a clever series of sliding glass partitions diffuse light, but also conceal a fireplace and, in a study, slide shut to become a guest room. Meanwhile, sliding doors along the glazed perimeter open onto a porch. To bring the house up to code and to curb visual obstructions, Scogin and Elam designed a glass railing. Standing there on a misty spring afternoon, the calls of redwing blackbirds and blue jays harmonized with the hum of the house in motion.

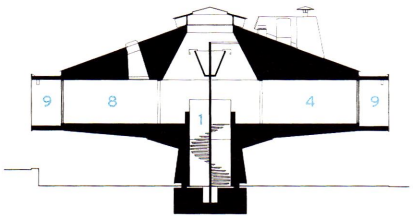
Scogin and Elam replaced the single-pane windows with double insulated glazing, restored and replaced the original weathering-steel fascia, and upgraded the cedar shingle cladding where necessary. Working with Foster's archives, which Rea Tully obtained from the architect's son, they were

DISK DRIVE
Though Richard Foster's Round House made its first appearance in Record's April 1969 issue (opposite, left), it still feels utterly ahead of its time, hovering above the verdant landscape like a midcentury UFO (above).

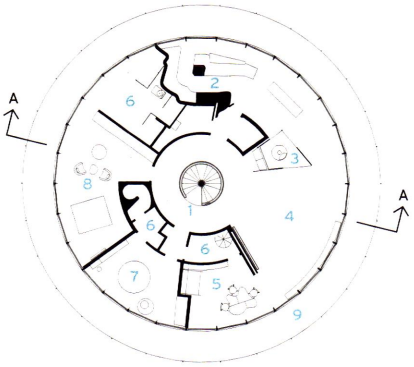








SECTION A - A



LIVING-LEVEL PLAN 0 10 FT. 3 M.

1 CENTRAL STAIR
2 KITCHEN
3 FIREPLACE
4 LIVING ROOM
5 STUDY/GUEST ROOM
6 BATHROOM
7 CHILD'S BEDROOM
8 MASTER BEDROOM
9 PORCH

IN THE ROUND Light from the house's 360-degree windows (top, left) is magnified by gleaming surfaces and a crisp palette of white and metallic finishes (bottom, left). Canvases by artist Joseph Kosuth surround the stair (above).

able to track down the original cobblestone specialist to redo the outdoor terrace, and the schematics for the ball bearing assembly. Remarkably, the mechanical components required minimal servicing—though the house needs the occasional greasing, says Rea.

Peculiar maintenance aside, the family has adjusted to life in their futuristic abode. They set it into motion every day—whether to entertain guests, to get a better view of their chicken coop, or to move away from the din of pond frogs at night. Rea is working to put this part of Foster's archive online, so that the public can learn about the architect's extraordinary home.

But the extra exposure might be unnecessary: tourists will often park in the Tullys' driveway to gawk. Luckily, the owners can simply turn the house away. ■


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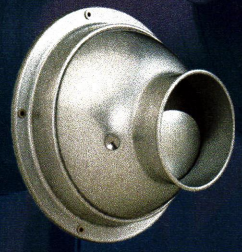
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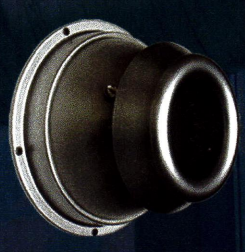
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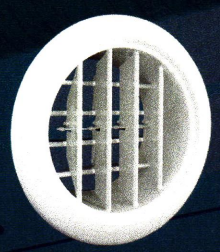
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Reversible TurboNozzle



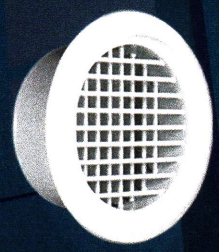
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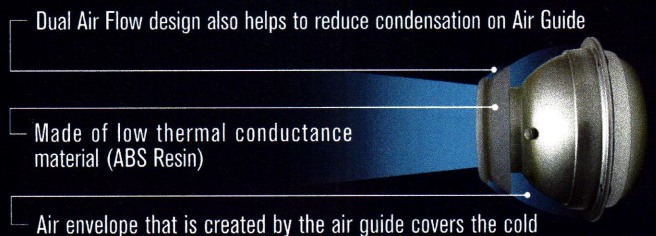
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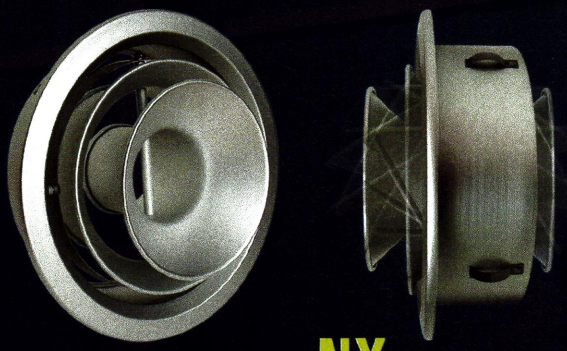
SpotDiffuser
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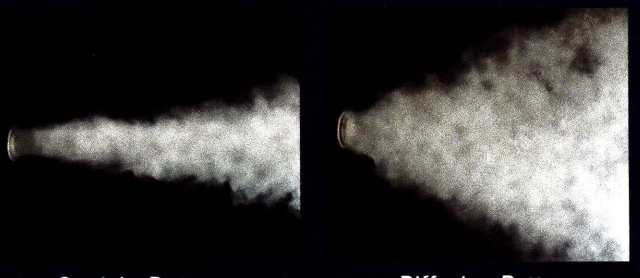
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Reversible TurboNozzle



Model: **NX**



Straight Pattern

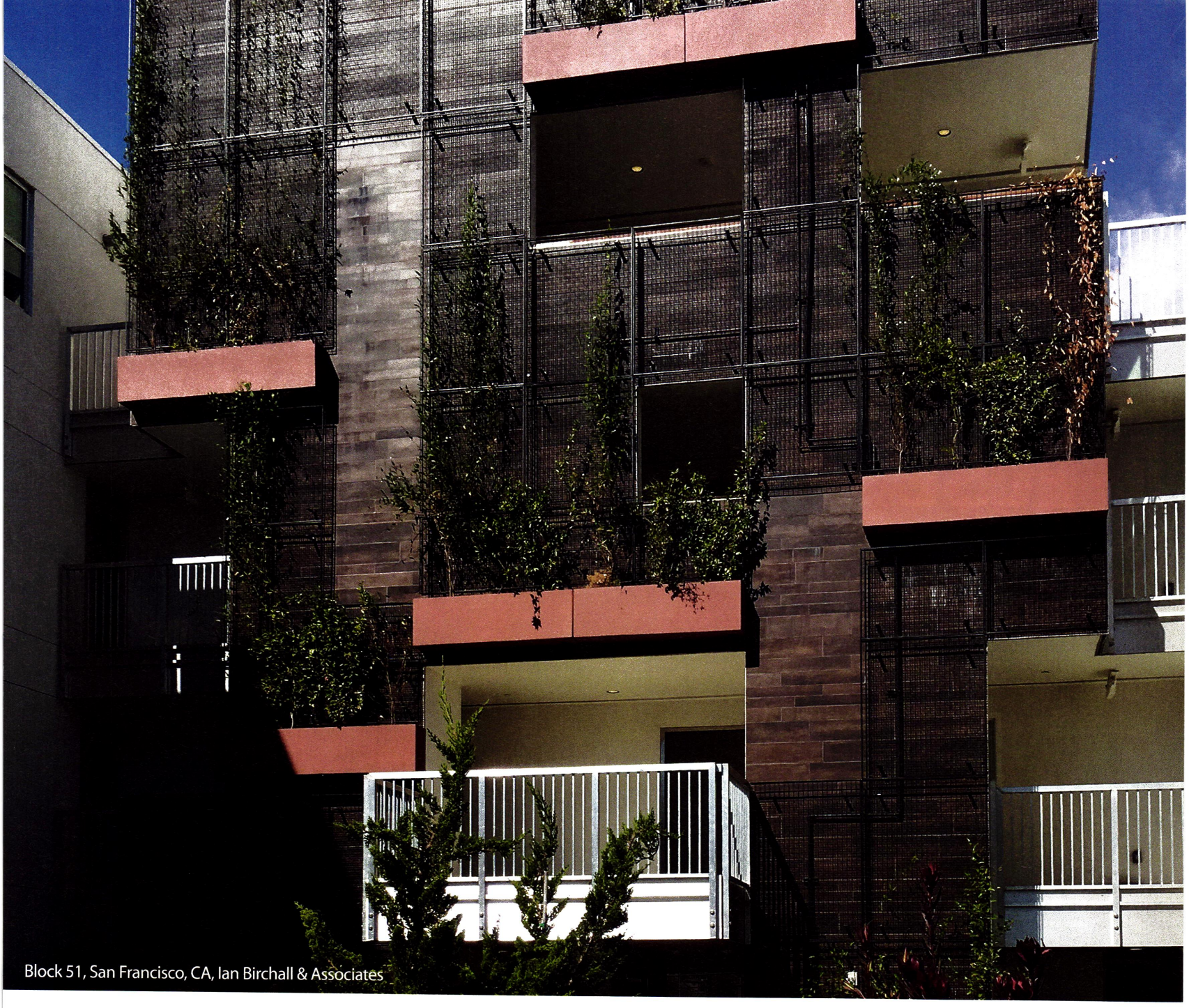
Diffusing Pattern

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Block 51, San Francisco, CA, Ian Birchall & Associates

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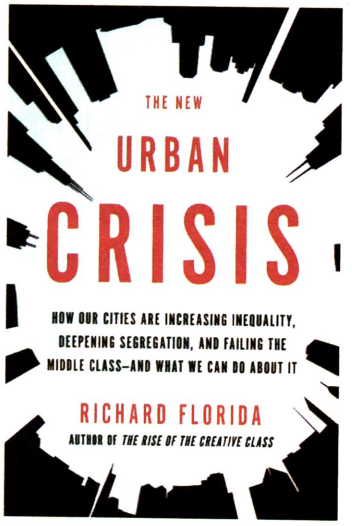
CIRCLE 338

Too Much of a Good Thing

The New Urban Crisis: How Our Cities Are Increasing Inequality, Deepening Segregation, and Failing the Middle Class–and What We Can Do About It, *By Richard Florida. Basic Books, April 2017, 336 pages, $28.*

Reviewed by James S. Russell

IN HIS best-selling book, *The Rise of the Creative Class* (2002), Richard Florida documented the growth of work related to knowledge and highlighted the importance of creativity, design, and art to business success. Highly educated, highly social "creatives" (the word has migrated from adjective to noun) spurned corporate suburbs and gravitated to cities that were diverse and rich in cultural and entertainment opportunities. Business followed the architects, designers, artists, app makers, writers, media entrepreneurs–among others–to the cities.



Yet in his latest book, Florida argues that this phenomenon has triumphed too well. The clustering of imaginative people and innovative businesses has not spread itself widely among metro areas but has ended up concentrated in a handful of "superstar cities"–Boston, New York, Washington, Chicago, Austin, Los Angeles, San Francisco, and Seattle. Here in the glittering gulches of skyscrapers and prowling Teslas, factors like stratospheric housing prices, costly entrepreneur-stifling zoning regulations, and a homogenizing tidiness threaten to kill the creative ethos.

There's more. Florida's new "crisis" is one of growing income inequality everywhere, segregation (by neighborhood, income, and race), and a disappearing middle class. It's a crisis of suburbs, where poverty, income insecurity, and crime grow. It's a crisis of the developing world, where urban hypergrowth and rapid industrialization fail to move people up the income scale.

But can you blame every urban ill on bike-riding young architects designing for social-impact investors while sipping artisanal Fair Trade coffee?

Architects have always understood the value of proximity to consultants and key clients. The superstar cities are attractive because creative-class businesses want to cluster there, and footloose, affluent people are willing to pay for the glamorous features. This wealth concentration is partly a product of the economic globalization that, since the fall of Communism, rewards large global-hub cities with top-drawer brains and leaves behind most of the rest.

These denser, desirable downtowns are inevitably more costly, but they can employ talent at all income and knowledge tiers if well supplied with transit. Florida understates the value of a comprehensive metropolitan mobility strategy (trains, buses, bikes, ride-sharing, and walkability) to reduce costs by drawing together affordable neighborhoods and good jobs. Since America fails to coordinate mobility investments and spends little on transit, cities with ample alternatives to driving are expensive because they are so few.

Then there is the nature of income equality, for which the new generation of creative entrepreneurs and the urban density they prefer are not responsible. Yes, some creative workers, especially in tech, have the market power to earn good salaries. But the vanishing middle class results from government policies that reward investors and penalize people whose jobs are replaceable. It's augmented by a business culture that believes that giving ordinary earners a raise will hurt stock prices. The stagnation and decline of incomes for service and industrial jobs is the most important reason job-rich cities shut out middle-income earners, suburbs grow poorer, and industrial cities struggle. Creators, especially the tech types, are the only ones with the market power to buck income stagnation. Is that so bad?

Florida crams his book with charts, and the numbers are often startling and illuminating. But he brings in few outside voices to put the numbers in context. This is why he misses the key point that today's dilemmas are not a "new urban crisis" but the result of broader unaddressed problems. ■

James S. Russell, FAIA, formerly a RECORD *editor, is the Director of Design Strategic Initiatives at the NYC Department of Design and Construction. The opinions expressed are his own.*



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CIRCLE 338

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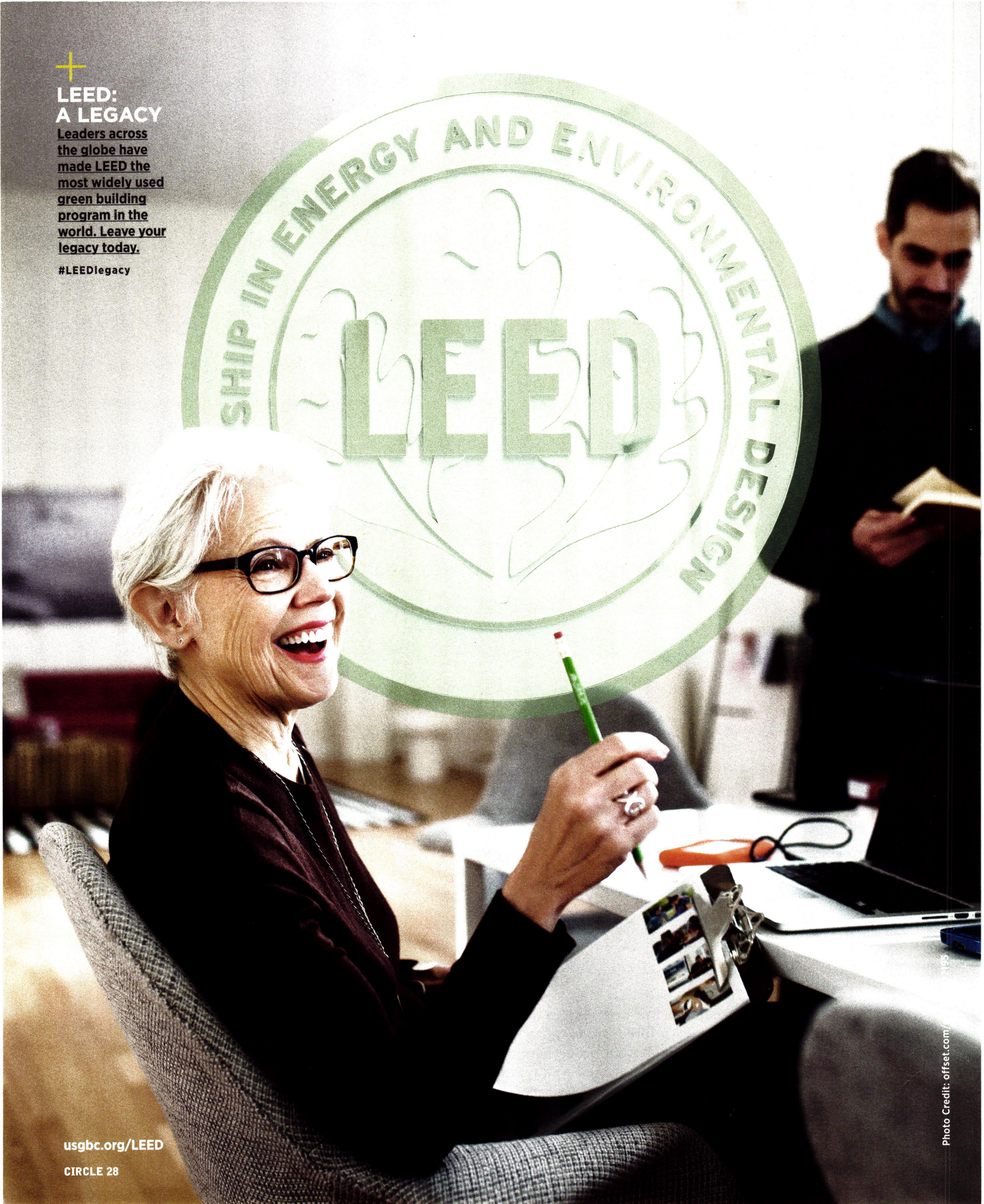
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CIRCLE 28
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Being There

Marfa Modern: Artistic Interiors of the West Texas High Desert, *by Helen Thompson; photographs by Casey Dunn. Monacelli Press, October 2016, 240 pages, $50.*

Reviewed by Laura Raskin

WHEN THE ARTIST Donald Judd began buying up land in Marfa in the 1970s, he saw the sleepy West Texas town and its sweeping desert vistas as the perfect backdrop for his austere sculptures. In Marfa, as opposed to the Manhattan gallery scene, Judd could conceive his own sprawling utopia.



Though he died in 1994, the 40,000 acres Judd purchased with the help of the Dia Art Foundation have made Marfa into a town-as-museum, including two artillery sheds exhibiting 100 of his untitled works, operated by the Chinati Foundation. Though most people make the pilgrimage to Marfa just to see Judd's work, some have come and stayed, inventively building or adapting houses that have a unique desert modernism attuned to the light and landscape, mirroring Judd's work or serving as a precedent to it.

Now, writer and editor Helen Thompson presents 21 case studies of the area's domestic architecture. She places them in three categories: "vernacular modern," which she describes as "old, probably adobe" and containing modernist elements that predated the movement; "handmade modern," a more ad hoc building style of simple forms; and "recent modern," contemporary houses by an architect or designer.

In the third category, a design by San Antonio–based architects Lake | Flato makes use of their line of prefab units called "Porch Houses." An artist couple with a remote site north of Fort Davis purchased two modules for an off-the-grid scheme that connects to the outdoors with sliding glass doors and a dogtrot between the bedroom and living units. Covered in a gabled zinc-and-aluminum roof, the residence nods to the metal barns and sheds of Texas's agricultural legacy.

For an old adobe example, Thompson describes a 100-year-old building that had been used as a lawyer's office and beauty parlor until Houston-based architectural designer Barbara Hill purchased and gutted it, preserving the original adobe walls. She covered them in white plaster and added new steel beams and rods for structural support. The result—now owned by a couple—is a luminous progression of rooms.

Thompson's clear, brief essays describe how each homeowner arrived in Marfa—a nice contextual touch, given that it's a remote place where residents and visitors have to decide very consciously to be. Her descriptions of plans, materials, and design concepts give heft to what could have simply been a lifestyle coffee table book. Photographer Casey Dunn leaves people and styling (extraneous food, flowers, and props) out of his shots, for the most part, which keeps the focus on design choices as well as the play of the desert light inside.

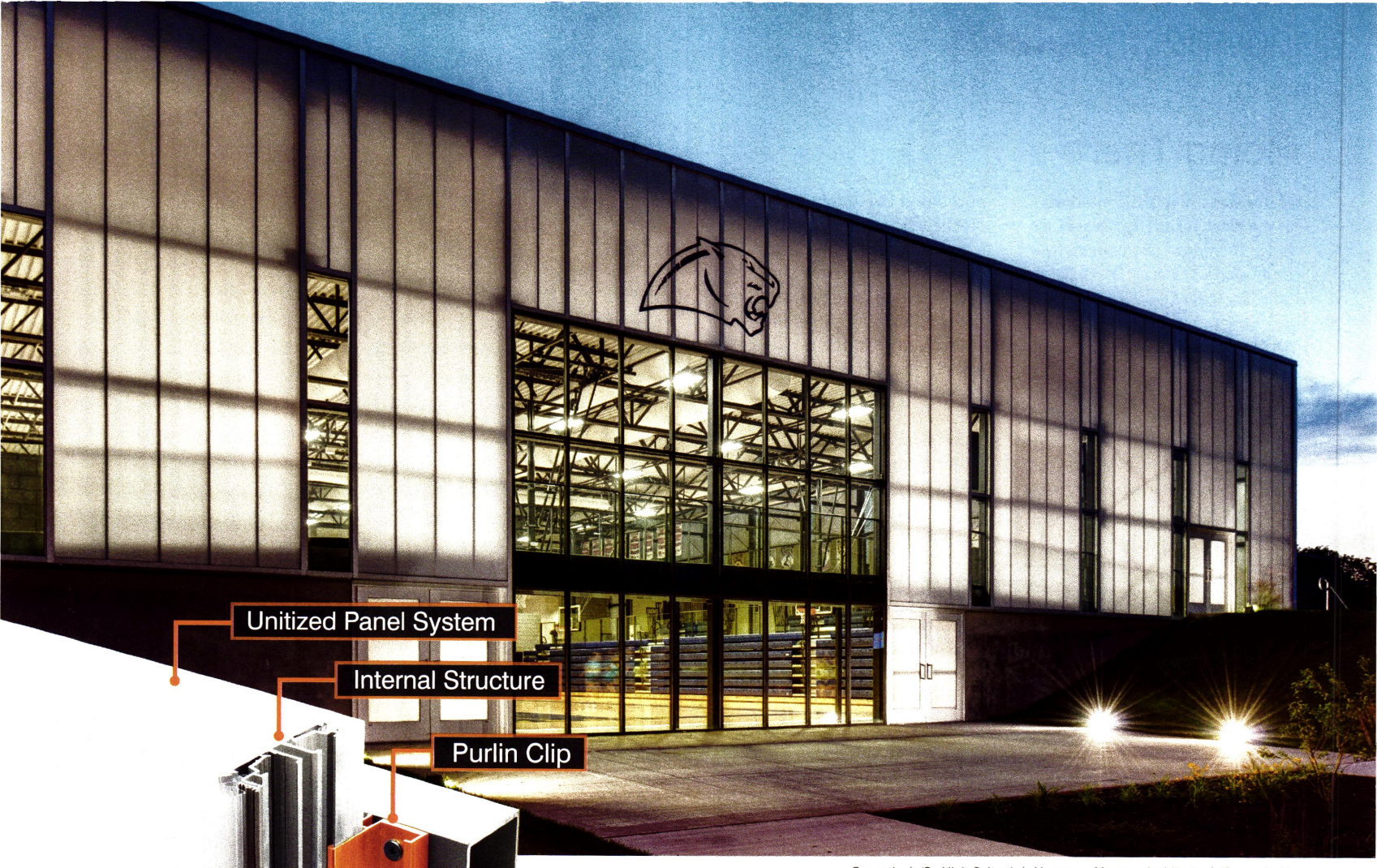
The result is a visual page-turner and is clearly a result of Thompson's reporting skills from her days at *Metropolitan Home* magazine. *Marfa Modern* serves as a primer on how a "watering hole" that Judd put on the map has evolved without him, and lets it lay claim to importance as a place of vernacular design, not solely an art destination. ■

Laura Raskin, formerly an editor with RECORD, *writes frequently on architecture.*

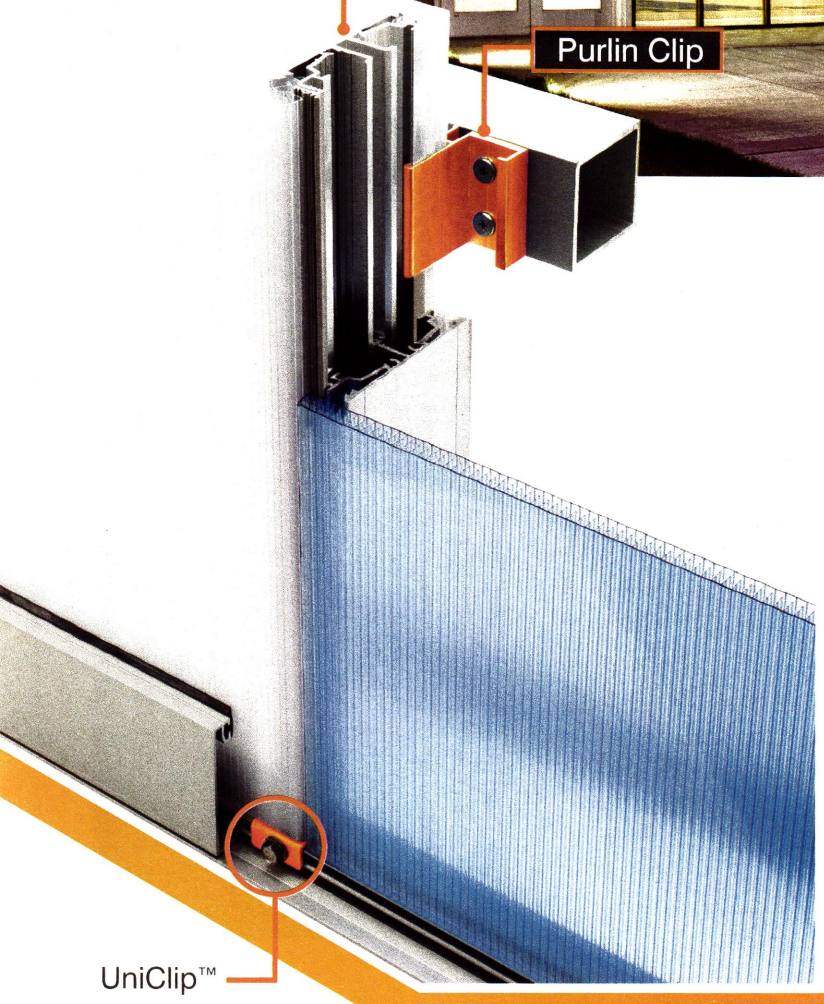


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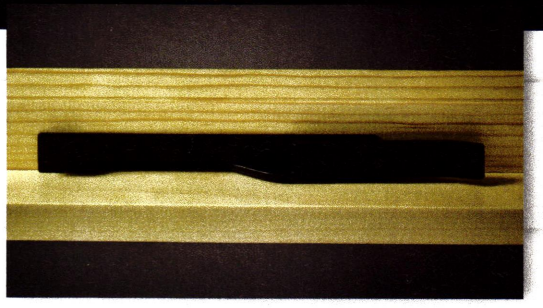
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CIRCLE 221

The evolution of contemporary: Kolbe's VistaLuxe Collection with Evo operator.



© Anice Hoachlander



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CIRCLE 248

Surface Value

These new wall treatments and systems save building occupants from boring interiors.

By Rita Catinella Orrell



ViviSpectra Elements Glass

Forms+Surfaces has expanded the ViviSpectra Elements Glass line with six new nature-inspired patterns. Suitable for interior and exterior use, the glass can be used with the brand's LEVELe wall cladding, elevator interior and column systems, and LightPlane panels. The line can also be used for room dividers, partitions, railings, backlit displays, and other custom fabrications in sizes up to 60" x 120".

forms-surfaces.com

CIRCLE 101



Vintage Ranch

Eldorado Stone captures the warmth of classic American barn wood with Vintage Ranch, a wood-plank profile inspired by the rich tones and texture of naturally weathered wood. Made of concrete, Vintage Ranch panels replicate the look and feel of oak, Douglas fir, and pine in four hand-painted color finishes for indoor or outdoor use.

eldoradostone.com

CIRCLE 100

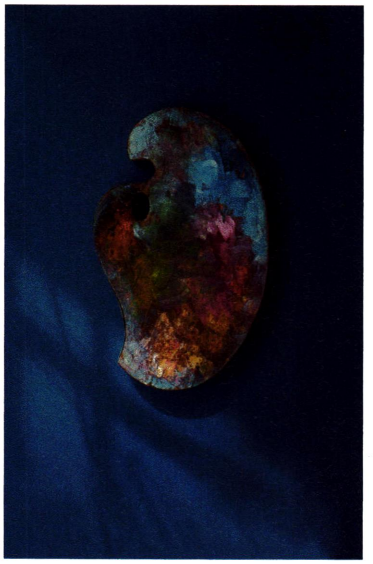


Acoustic Felt

3form has expanded its line of sound-management systems with Acoustic Felt, a ¼"-thick absorptive material made from 50% pre-consumer recycled PET. Acoustic Felt can be configured into lightweight modular tiles with an NRC of .90 for the Seeyond (dimensional tile) system, or into sound-absorbing fins for partitions, walls, or ceilings with an NRC of .45 for the Edge (vertical fin) system.

3-form.com

CIRCLE 102

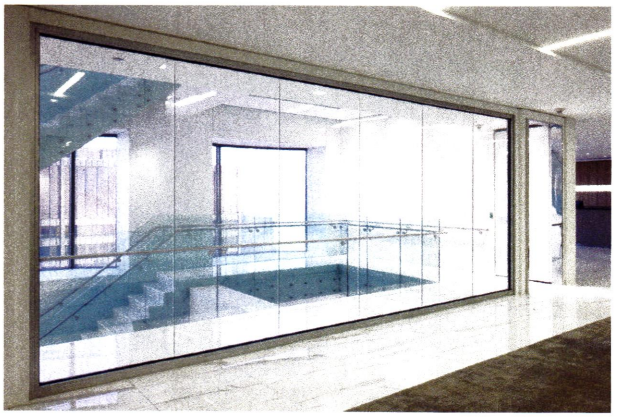


Century

This premium paint line from Benjamin Moore is a collection of 75 new colors ranging from mid-tone to dark shades inspired by natural elements such as minerals (Cobalt, left), gems, spices, herbs, and plants. Available in a first-of-its-kind Soft Touch Matte finish, Century comes in pre-mixed gallons and 4-ounce color samples.

experiencecentury.com

CIRCLE 103



Fireframes ClearView System

This butt-glazed fire-rated framing from TGP eliminates the need for colored internal spacers or vertical mullions between adjoining pieces of glass. Available in nearly 10' heights with vertical butt joints of less than ¼" wide, the system accommodates extensive 60-minute fire-rated glazed walls with nearly colorless transitions between panels for greater transparency through hallways in commercial buildings.

fireglass.com

CIRCLE 104

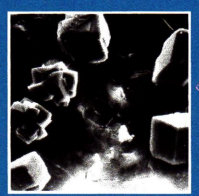
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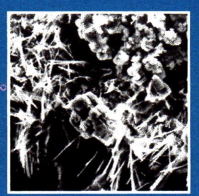
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Xypex Crystallization (Initiated)



Xypex Crystallization (Mature)

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CIRCLE 95

The Outside Scoop

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By Rita Catinella Orrell

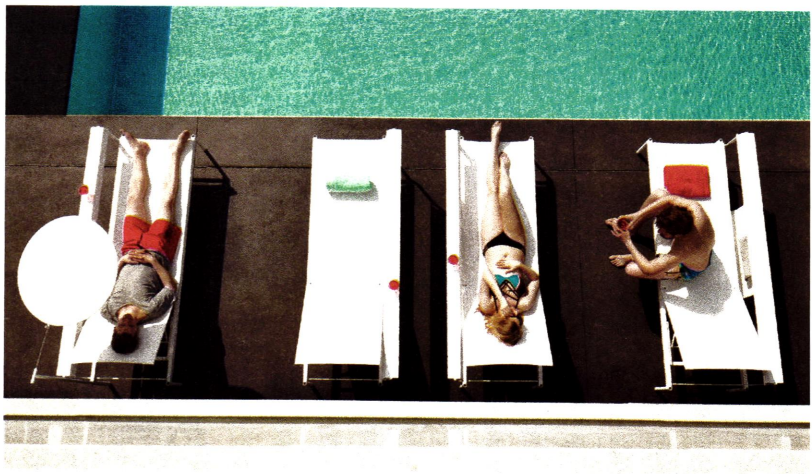


Traffic

Designed by Konstantin Grcic for Magis, this outdoor lounge collection for contract or residential use includes a two- or three-seater sofa (above), armchair, bench in two versions, chaise longue, and tables framed in powder-coated steel rods. Polyurethane cushions with removable fabric covers are offered in a range of colors. A small side table in artificial stone is also available.

magisdesign.com

CIRCLE 105

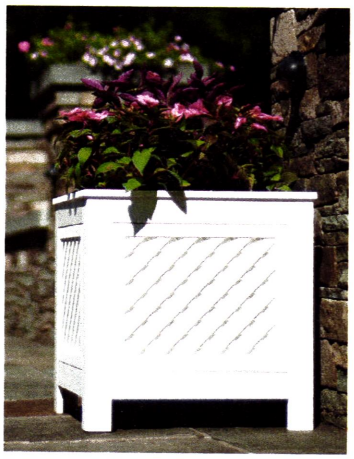


Sol+Luna

The addition of a few cushions transforms the Sol+Luna "lounge" by Extremis from a sun bed (above) into a comfortable sofa for three. A wide bar along its side works as a handy shelf for drinks when reclining or as a backrest to support cushions for sitting. Sol+Luna is available with tables, a towel holder, storage pouch, and an optional adjustable sunshade that converts into a moon-shaped light at night.

extremis.be

CIRCLE 106



PlanterSpeakers

Hidden in architectural planters, these resilient speakers can be controlled via smartphone to create outdoor sounds for gardens, decks, or patios. Available with a range of audio specifications, the speakers are sealed and weatherproof and come in a variety of shapes, sizes, and materials—from low-maintenance AZEK and industrial-grade poly resin to sustainably farmed teak and reclaimed wood.

planterspeakers.com

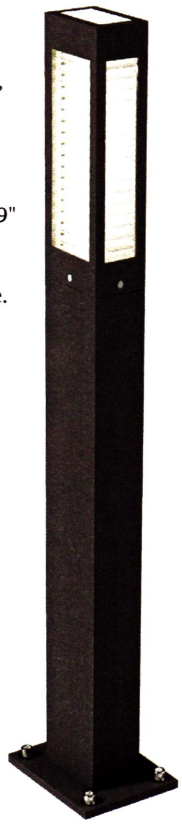
CIRCLE 107

Morocco

This architectural bollard provides effective, glare-free LED illumination with low power consumption for pedestrian areas, building entrances, sidewalks, and pathways at corporate campuses, parks, cultural centers, and other settings. Morocco is available in 39" and 43" heights to meet scale requirements and features a slender rectangular profile, louvered optics, and stainless-steel hardware.

hessamerica.com

CIRCLE 108



Avivo Bar Stools

The Forms+Surfaces Avivo family of coordinating chairs and standard and bar-height tables now includes bar stools. The Avivo line features frames of detailed cast aluminum and seats and backs made of formed aluminum. The bar stools have a durable powder-coat finish in stock or custom colors and may be specified with or without one of three perforation patterns on the seats and backs.

forms-surfaces.com

CIRCLE 109



For more information, circle item numbers on Reader Service Card or go to architecturalrecord.com/products.

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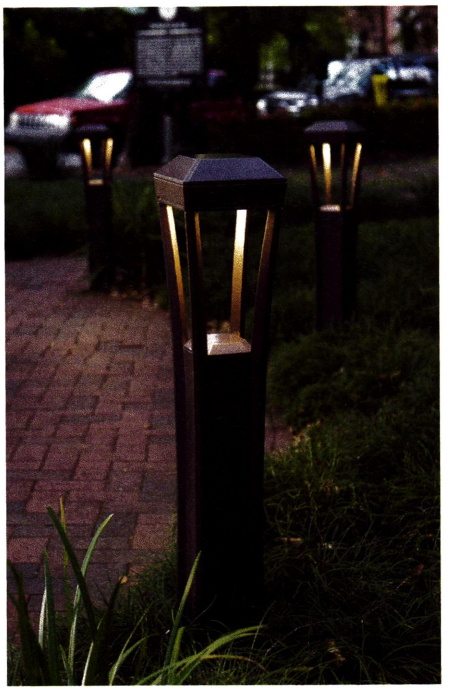


Prism Planter

Pennoyer Newman's modern geometric planter for residential or commercial interiors or gardens features angled and refracting surfaces. Handcrafted in New York in the company's signature lead gray, from a mixture of marble, rock, and resin, the Prism planter comes with pre-drilled drainage holes and measures 18" high x 20" wide.

pennoyernewman.com

CIRCLE 110



Palissade

Designed by Ronan & Erwan Bouroullec, this collection includes 13 coordinating furnishings in a color palette of light gray, anthracite, and olive. Developed over the course of two years, the pieces are made from powder-coated steel and include dining chairs, tables, a low stool, bar stool, bench (right), dining bench, lounge chairs, and a sofa.

hay.dk

CIRCLE 111

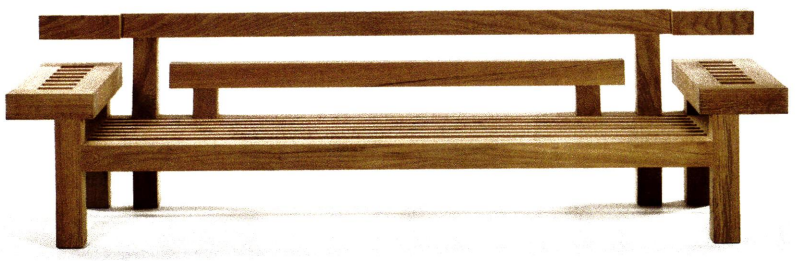


Ashbery

Designed in collaboration with Robert A.M. Stern Architects and the lighting-design firm Fisher Marantz Stone, these outdoor luminaires include 12'-, 14'-, and 16'-tall pedestrian lights, a 3'-tall pathway light (above), and a wall-mounted light that recall archetypal gas lamps. The fixtures house LEDs behind a diffuser lens that emits a pleasing glow, radiating from the center outward.

landscapeforms.com

CIRCLE 112



Nara

Inspired by the travels of the renowned French landscape architect Louis Benech, Nara is the first collection in Royal Botania's Black Label series. Handmade of fine teak, the modern outdoor collection includes a lounge bench (shown), a dining table with a ceramic top, dining chair, sun lounger, lounge chair, low tables, and an avant-garde three-legged seat.

royalbotania.com

CIRCLE 113



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moistureshield.com

CIRCLE 114

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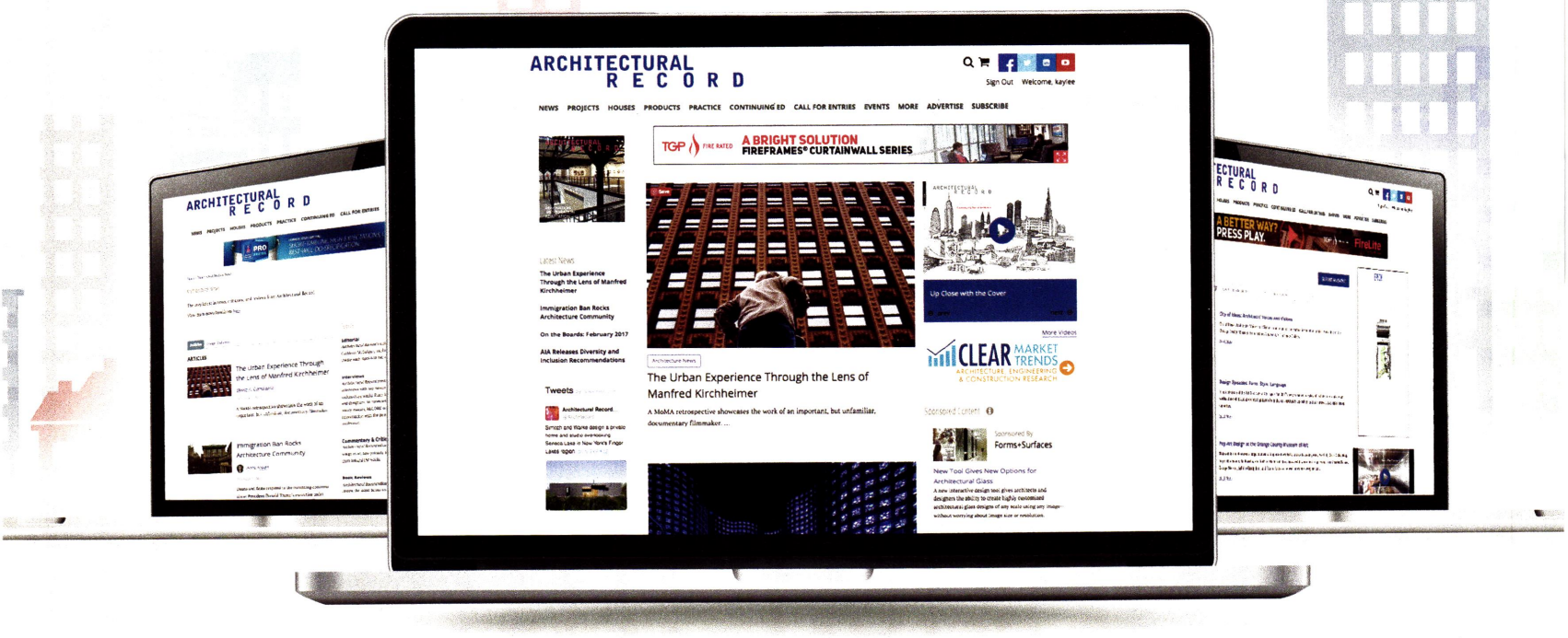
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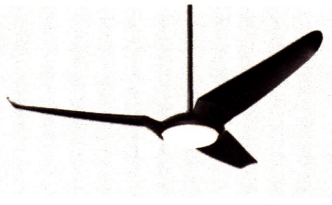
A Collection of Ceiling Fans Designed by Ron Rezek

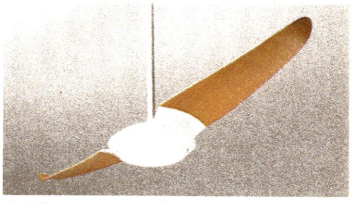
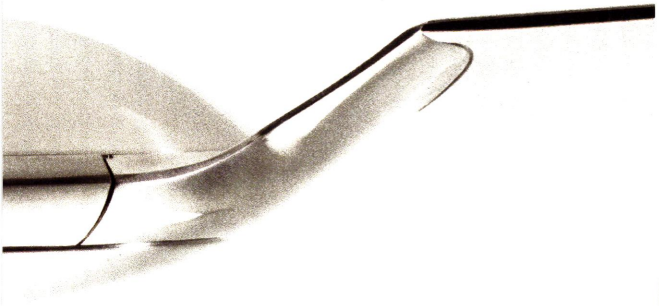
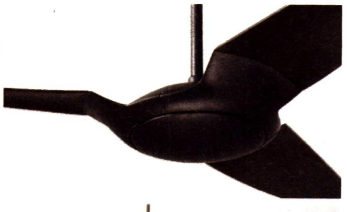


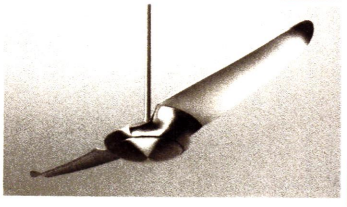
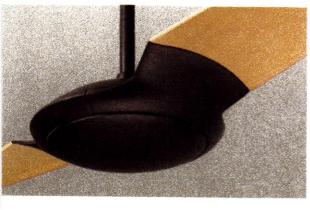
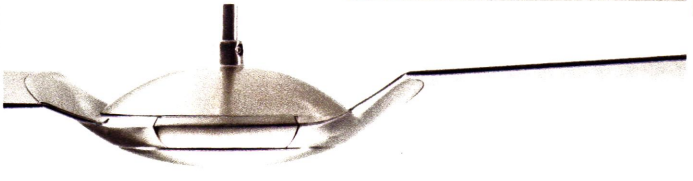
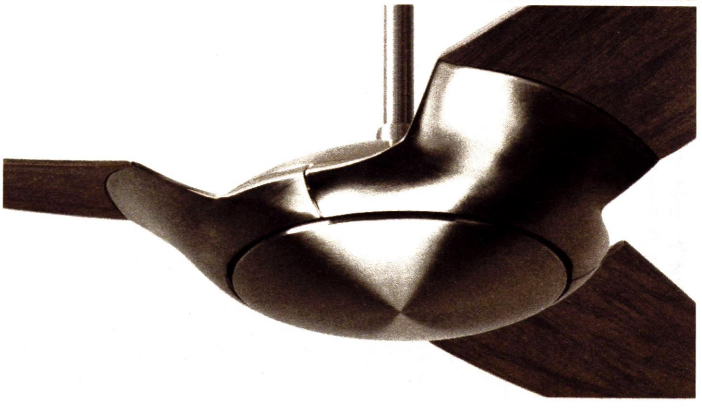
IC/Air3

: designed by Guto Indio da Costa

modernfan.com

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CIRCLE 311

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CIRCLE 142



RECORD HOUSES 2017

Over the years our Record Houses selections have veered from the quirky, quixotic, and idiosyncratic to the ruggedly vernacular or elegantly modern. They also range from solutions for tight urban sites to more remote, expansive properties. What ties them together? Practicality? Modest budgets? Efficient layouts? Not really. We value the experimental, the imaginative, and the unexpected, along with a strong sense of craft, exploration of materials, and skillful manipulation of spaces. So, come with us as we visit the latest winning houses in Japan, Chile, France, and America.

UNDERHILL HOUSE, MATINECOCK, NEW YORK
BATES MASI + ARCHITECTS

PHOTOGRAPHY: MICHAEL MORAN/OTTO

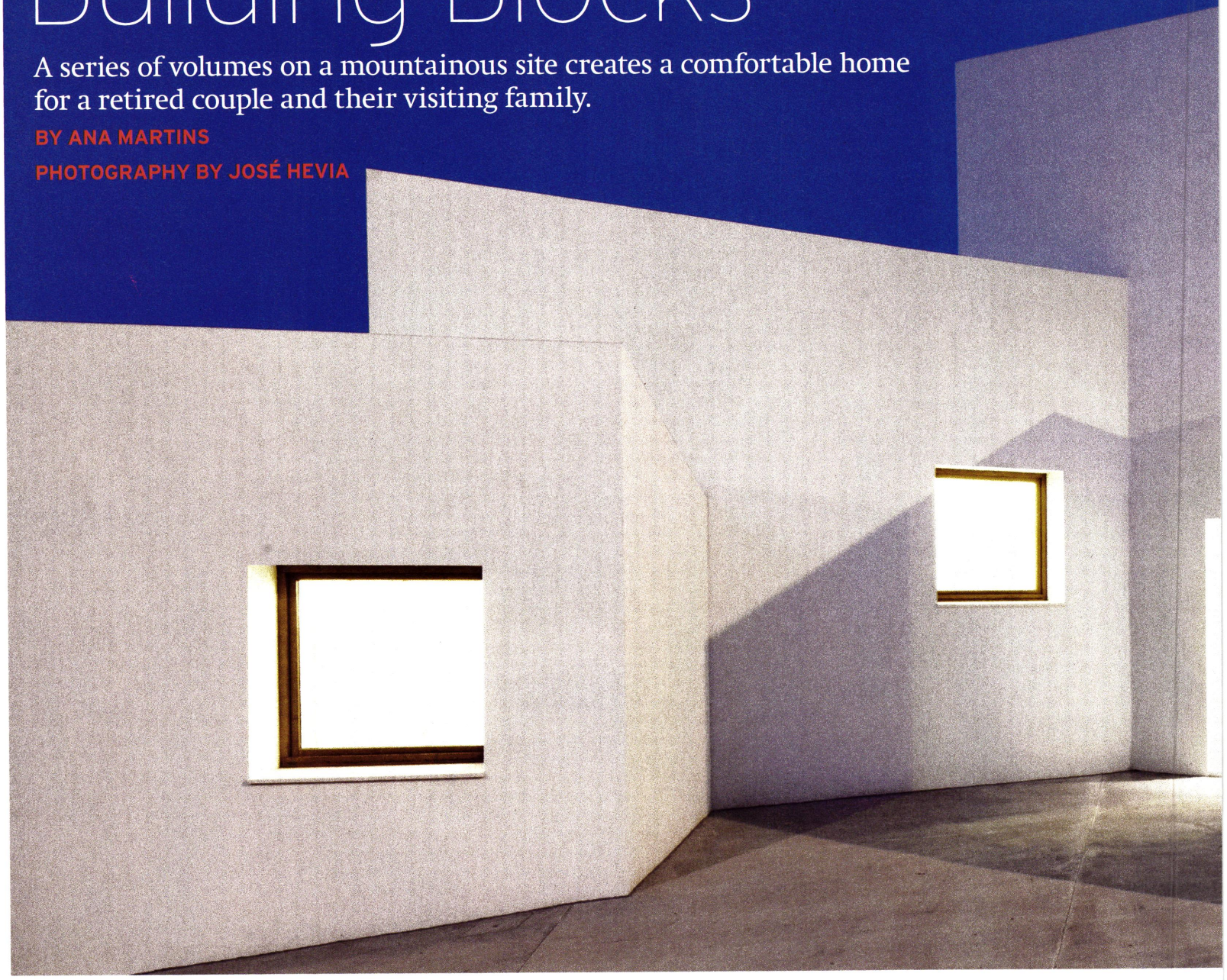
MM House | Palma de Mallorca, Spain | OHLAB

Building Blocks

A series of volumes on a mountainous site creates a comfortable home for a retired couple and their visiting family.

BY ANA MARTINS

PHOTOGRAPHY BY JOSÉ HEVIA



Five years ago, against the advice of friends and family, a Majorcan couple decided to build a new house on the island off the Spanish coast. Though they were nearing retirement, and Spain's economy was still shaky, they went ahead and commissioned OHLAB, a Palma-based firm that has been gaining an international reputation (RECORD, October 2016, page 108, and September 2013, page 94). Now the distinctive design of the MM House (so called for the names of the adventurous husband and wife, Margalida and Miquel) has won a 2016 World Architecture Festival award—but, more important, it has deeply satisfied the clients' wishes. On a sloped site at the edge of the Tramuntana mountains, just outside Palma (Majorca's largest city), the house is based on a straightforward concept. Divided into four connected boxes, it is, according to the owners, "Simple, clean, and elegant."

Once OHLAB cofounders, Jaime Oliver and Paloma Hernaiz, understood the clients' vision for their home—a peaceful, low-maintenance oasis where they could be just as comfortable hosting their children and grandchildren as they would be living by themselves—the architects proposed the solution that immediately won the couple's approval. "We were captivated by the model," Margalida says. "Its triangular rooftop balcony fascinated us, and the entrance reminded



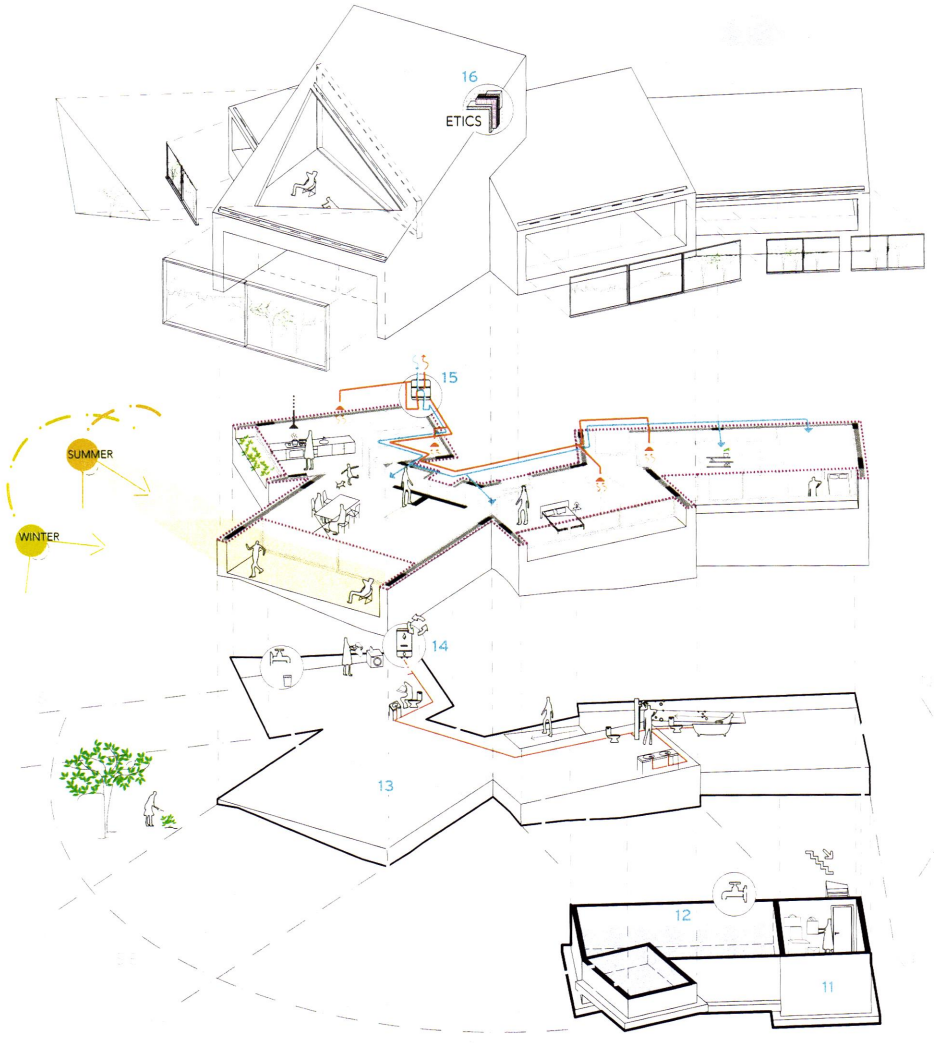
BOXED UP
The architects created a street facade for the single-family residence that resembles a group of small Mediterranean houses, its smooth, white stucco walls and square windows concealing the design's complex geometry.

us of the white houses of Ibiza."

Sitting at the top of a half-acre site, the starkly geometrical house is made of reinforced concrete covered with an External Thermal Insulation Composite System (ETICS—the equivalent of an Exterior Insulation Finishing System [EIFS] in the United States) and finished in white stucco. "The structure is concrete because, even though it looks quite simple, there are a lot of complicated structural moments," Oliver explains. For instance, the upper floor of the main volume cantilevers over the kitchen and master-bedroom boxes, providing a visual segue among the separate forms.

With a total area of 2,100 square feet, the four boxes—each accommodates a different function—have panoramic windows directed toward the garden, the sea, or the city beyond. The main entrance leads inside the central box, which faces the Mediterranean and houses the living/dining area on the ground floor and an elevated study on the way to a rooftop balcony. The south-facing kitchen block looks onto a vegetable garden, while on the other side, the remaining two boxes harbor the master bedroom and guest rooms, both of which enjoy views of Palma's Gothic Bellver Castle and the cityscape.

The modular arrangement of the living areas ensures that the house adapts to the needs of the clients at any given moment. It can be used as a one-bedroom dwelling when there are no visitors, and—de-

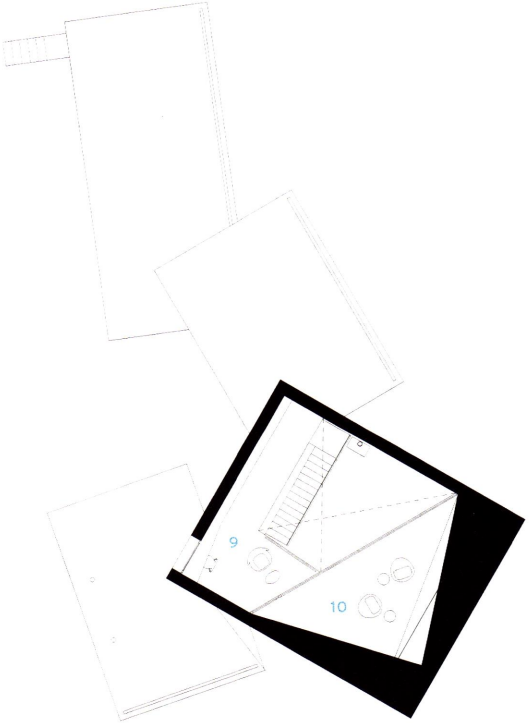


EXPLODED AXONOMETRIC DIAGRAM



GROUND-FLOOR PLAN

0 10 FT.
3 M.



FIRST-FLOOR PLAN

1 ENTRANCE
2 LIVING/DINING
3 KITCHEN
4 LAUNDRY
5 POWDER ROOM
6 MASTER SUITE
7 BATHROOM
8 BEDROOM
9 STUDY
10 TERRACE
11 BASEMENT
12 RAINWATER-STORAGE SYSTEM
13 RAINWATER DISTRIBUTION
14 HOT WATER
15 AIR REPLACEMENT
16 ETIC SYSTEM





OPEN HOUSE Large glazed openings blur the divide between interior and exterior (above) and serve to fully integrate the house with the garden, where native vegetation and deciduous trees abound. The kitchen and living area can be experienced as a single open space or separated by a sliding door (right).

pending on whether the sliding door is open or closed—the kitchen and social areas can be experienced as a single, fluid space or completely separate rooms.

In spite of the partitioned plan, the architects' palette of materials contributes to the fluidity of the interior spaces. Pinewood furniture echoes the window frames, and green and beige hydraulic floor tiles flow throughout the various spaces. With only these colors, in two size formats, Oliver and Hernaiz created a different pattern for each box: predominantly beige with touches of green inside, and the reverse on the rooftop balcony. According to Hernaiz, "The tiles represent a sort of abstraction of the house's exterior and surrounding vegetation," so they not only unify the interiors but also connect them with the exterior.

Sustainability and low maintenance costs were priorities, so the architects designed the house to the Passivhaus standard. Large, recessed, south-facing glazed openings let in the low winter sun while protecting the house from the high summer sun, and smaller openings on the opposite facades allow cross ventilation. In addition to the building's ETICS facade, OHLAB incorporated such technologies as a solar water heater, heat exchanger, and hydronic radiant-floor heating and cooling systems.

Located within a 2011 UNESCO World Heritage site, and with a tradition of rainwater storage that was first developed by the Arabs during the Middle Ages, the entire house is a complex water-collection system, which the architects developed with the owners. Rain falling onto its pitched roofs is guided through a filtering system into two underground water tanks: a 1,413-cubic-foot tank for irrigation and a smaller, 283-cubic-foot one for drinking water. The house is "com-





pletely autonomous in terms of water," the architects say.

During its first two winters, the house's thermal insulation was more efficient than expected, with the average interior temperature of 71.6 degrees Fahrenheit. "When the weather starts to cool, people ask us if we have the heating on and are very surprised when we say no," Margalida says. During its first summer, however, the inverse happened, with interior temperatures reaching 82.4 degrees Fahrenheit. In order to prevent the house from overheating during the early hours of the morning, when the sun is low, the design team placed exterior curtains made of agricultural shade mesh in the garden-facing windows.

OHLAB will continue to monitor the performance of the house and make improvements to the design accordingly. As Oliver puts it, "Every project is like a baby; you don't want to get too far away." ■

credits

ARCHITECT: OHLAB – Paloma Hernaiz, Jaime Oliver, principals; Rebeca Lavín, Walter Brandt, Sergio Rivero de Cáceres, design team; Jorge Ramón, quantity surveyor

ENGINEERS: Jesús Alonso (structural)

GENERAL CONTRACTOR: Mihai Niculai

SIZE: 2,100 square feet

CONSTRUCTION COST: $290,000

COMPLETION DATE: March 2016

SOURCES

BUILDING ENVELOPE: Baumit (ETICS)

ROOFING: Cas Cerámica (tile)

GLAZING: Cristalería Bellver

WOODWORK: Carpintería Palmer (paneling, window frames, doors)

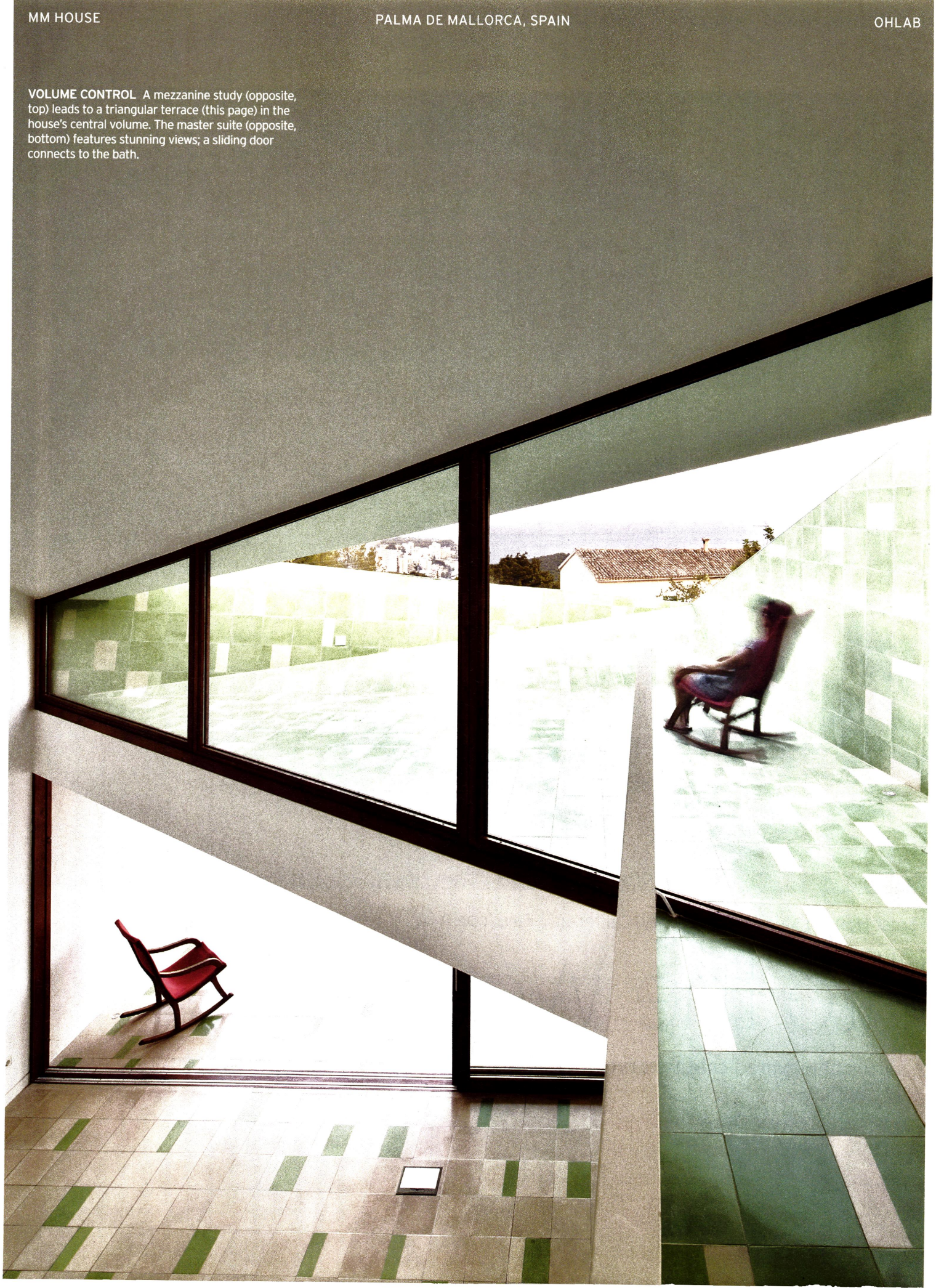
FLOORING: Huguet (tile)

PLUMBING: Roca, Paffoni

HVAC: Unifrio

FURNISHINGS: Vitra, Knoll, Thonet

VOLUME CONTROL A mezzanine study (opposite, top) leads to a triangular terrace (this page) in the house's central volume. The master suite (opposite, bottom) features stunning views; a sliding door connects to the bath.





Forest House | Mendocino County, California | Envelope A+D

Into the Woods

A series of elevated cabins serves as a remote getaway with some of the comforts of home.

BY JOSEPHINE MINUTILLO

PHOTOGRAPHY BY RICHARD BARNES



FOREST FLOOR The unusual geometry of the master cabin, raised on 4x4 posts, developed to avoid cutting down trees (above). In mild weather, the living room completely opens up, but during colder periods, it is heated with a fireplace (opposite).

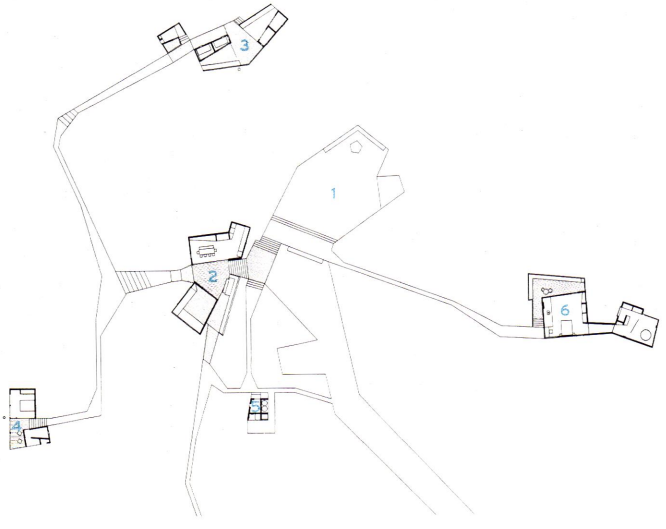
It's a special kind of building that tries to be at one with nature, having minimal impact on the land while blurring the distinction between interior and exterior. To turn that kind of architecture into a home in a heavily wooded area where the climate can shift from dramatic heat to below freezing—and where insects and wild boar abound—takes a particularly intrepid client.

In recent years, a heightened interest in ecotourism has given rise to many remarkable built works that go deep into the forest and offer an intimate relationship with the surroundings. In northern Sweden, Tham & Videgård Arkitekter suspended a suite for the Tree Hotel midair around a tree trunk. Portuguese architects Diogo Aguiar and Luís Rebelo de Andrade created an eco-resort out of a series of huts on stilts nestled around trees. But these were intended for what oftentimes turns out to be a single, short visit. Imagine frequent visits and occasional long stays within such structures. That's the scenario Berkeley-based Envelope Architecture + Design created in a weekend and holiday retreat for a couple and their three young children.

This wasn't the first time Envelope A+D principal and founder Douglas Burnham worked with the family, having previously renovated their primary residence. A level of trust had already been well established, but, still, a sense of adventure was necessary to see this project through.

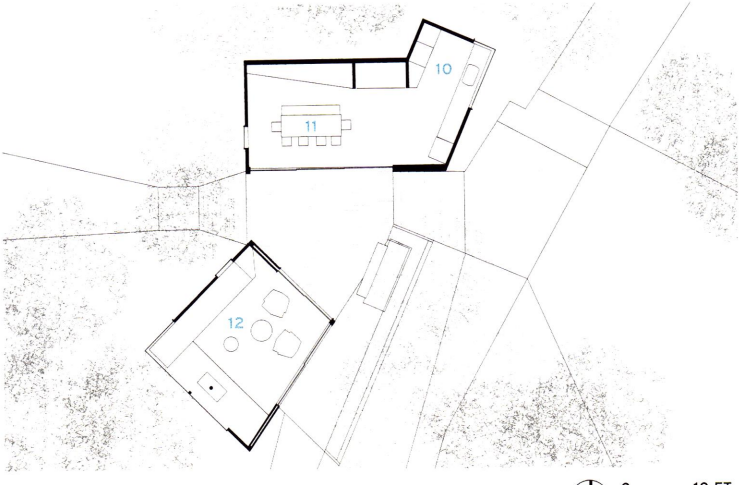
It began, somewhat like an experiment, with what is now the guest suite. That was the first of nine tent cabins within four clusters—each fully serviced with plumbing and electricity. The cabins are spread out over two acres around a central plaza—a cleared area by the main pavilion, paved with concrete—within a much larger hilltop property that is accessed by a narrow, winding gravel road beyond the pictur-





SITE PLAN

0 30 FT. 9 M.



COMMUNAL

0 10 FT. 3 M.

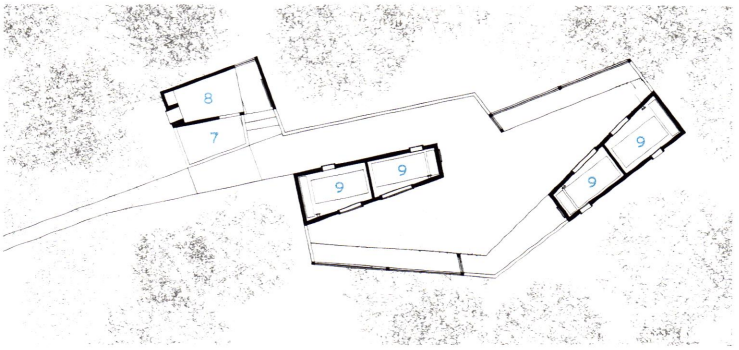


GUEST SUITE

1 PLAZA
2 COMMUNAL
3 CHILDREN'S BUNKS
4 GUEST SUITE
5 OUTHOUSE
6 MASTER SUITE
7 SHOWER
8 BATH
9 BUNKS
10 KITCHEN
11 DINING
12 LIVING
13 BEDROOM
14 HOT TUB



CABIN FEVER
Though a distinct structure, the living room is connected to the kitchen and dining room as part of the communal cabin (opposite). The guest suite features a separate bedroom and bath (left). The children's bunkhouses are as high as 17 feet from the ground (bottom).



CHILDREN'S BUNKS

credits

ARCHITECT: Envelope A+D

ENGINEERS:
Mosswood Engineering

CONSULTANTS:
Terremoto (landscape)

GENERAL CONTRACTOR:
Insight Construction

SIZE: 2,100 square feet

COST: withheld

COMPLETION DATE:
December 2015

SOURCES

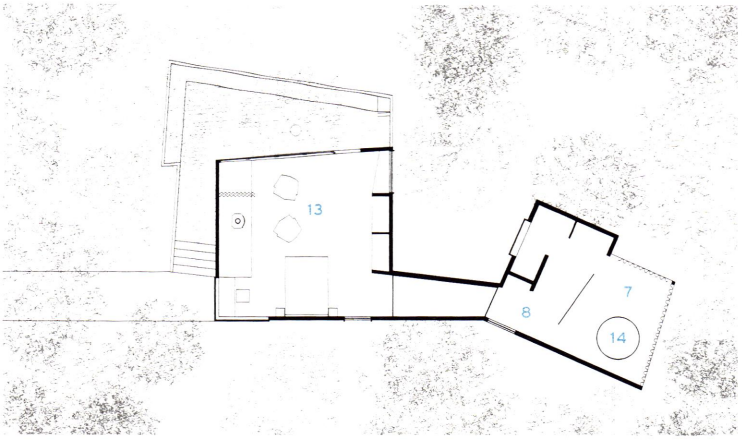
LIGHTING: Atelier de Troupe, Workstead, Stone Lighting, Original BTC, Allied Maker, Rich Brilliant Willing, Lambert & Fils, Brendan Ravenhill, Flos, Roll & Hill

PLUMBING: Duravit, Geberit, Vola, Sonoma Forge, Dornbracht, Lacava, Signature Hardware, Chicago Faucet

DOORS: NanaWall (folding), Fleetwood

TILE: Soli, Ann Sacks, Mosaico+

APPLIANCES: Sub-Zero, Wolf, LG, Vent-a-Hood, Asko, Dometic



MASTER SUITE





esque vineyards of Mendocino County in Northern California.

Raised several feet off the ground on 4x4 posts, the cedar-clad bedroom and detached bath introduced ideas that would be amplified in future structures erected over the course of a continuous two-year building process. "The design evolved with time," Burnham says. "We call it cocreating by iterating."

In order to keep as many of the scraggly manzanitas, madrones, and California live oaks as possible, the guest suite's L-shaped plan weaves among the slender, slow-growing trees. (The geometries of later, larger cabins would become increasingly intricate.) Its sloping roof consists merely of two layers of treated Army green canvas supported by rafters and tied down by what Burnham calls "an expressive trusswork" of nylon rope, the kind used by rock climbers. But more than the construction itself, it is the interplay of indoor and outdoor, public and private, real and perceived that elevates the experience of these hybrid shelters to something beyond glamorous camping.



ROUGHING IT Nylon rope holds the canvas roofs firmly in place; the sound of raindrops on the taut surface during storms is entrancing (opposite, top). Each of the children's bunks, nestled within the walls, features a different color scheme (opposite, bottom). Cabin interiors are lined with Douglas fir plywood (right).

From the bedroom of the guest suite, for instance, you proceed outside to the deck, then reenter the covered space of the bathroom, only to pass again to the outdoors where, through the use of subtly tinted glass and two-way mirrors, a shower feels both intimate and exposed at the same time, challenging your discernment of enclosure, personal space, and even temperature.

Some variation of this experience—influenced by the mirrored-glass pavilions of artist Dan Graham—is repeated in the en suite bathrooms for the children's and master cabins. (A detached structure called the outhouse serves the communal cabin containing the kitchen, living, and dining areas, and a completely open outdoor shower is located out of view from the cabins.) The chromatic immersions of artists James Turrell and Carlos Cruz Diez inspired the range of saturated colors in the individual bunks, built at various heights within the walls, where the children and their friends sleep. Located on the opposite side of the plaza from the master cabin and elevated as high as 17 feet from the sloping ground beneath (it is supported by additional 4x4 bracing), the children's cabin is fairly autonomous.

In fact, each of the cabins is independent—"individual chambers of experience," according to Burnham—joined by a ramping walkway and steps of 3-inch-thick planks of sustainably harvested redwood. "It was a question of, How do you pull out of the land the idea of isolation and connectivity?" recalls the architect, who initiated the project by walking the site and marking with string the shapes and locations of the cabins.

While larger conceptual issues permeated the design process—including expanding the narrow band of what we perceive comfort to be—there were also practical matters to address. Though originally designed without cooling, small air conditioning units intended for use in mobile homes were added, their ductwork visible on the underside of the uninsulated cabins. Fireplaces heat some of the cabins. Early on, a fallen branch damaged one of the canvas roofs, requiring replacement. The wood path serves an additional purpose—making rattlesnakes more visible. (One of its boards can be lifted into a vertical position to prevent a wild boar from climbing into the main cabin.) And, while the architects dealt with physical notions of isolation and connectivity, from a virtual perspective, the site has full access to WiFi, which, by today's standard, is the ultimate necessity. ■





Triangle House | Tokyo | Shigeru Ban Architects

Finding the Right Angle

A three-sided plan optimizes a quirky site for a client's well-crafted home cum office.

BY NAOMI R. POLLOCK, AIA

PHOTOGRAPHY BY HIROYUKI HIRAI

The Pritzker laureate Shigeru Ban may have designed major museums and monumental concert halls, but, when it comes to testing out new ideas, nothing beats a private house. Triangle House, the architect's latest residence, is his first realized work defined throughout by a triangular geometry. Situated on a sloping site in central Tokyo, this hybrid building combines the client's home and office under one three-pointed roof. While the concrete-encased work space is partially embedded in the earth, the timber-capped living space, which overlooks a public park next door, is as light and airy as a treehouse. Both parts showcase the project's expressive structural design, a signature of Ban's architecture.

The project began with a cold call from the client, who had an irregularly shaped 5,700-square-foot parcel and a wish for a custom-designed house. As putting a business and residence in one building is common in Japan, the program was straightforward. The challenge came from the land itself. To preserve the client's option of selling part of his property in the future, Ban configured the salable parcel first. While there is no minimum buildable lot size in Tokyo, the plot's shape and southern exposure would have positive effects on its marketability. The architect's calculations left a 2,100-square-foot triangular lot for the client's building—a result that informed the geometry of everything from the overall massing of the building to an outdoor barbeque.

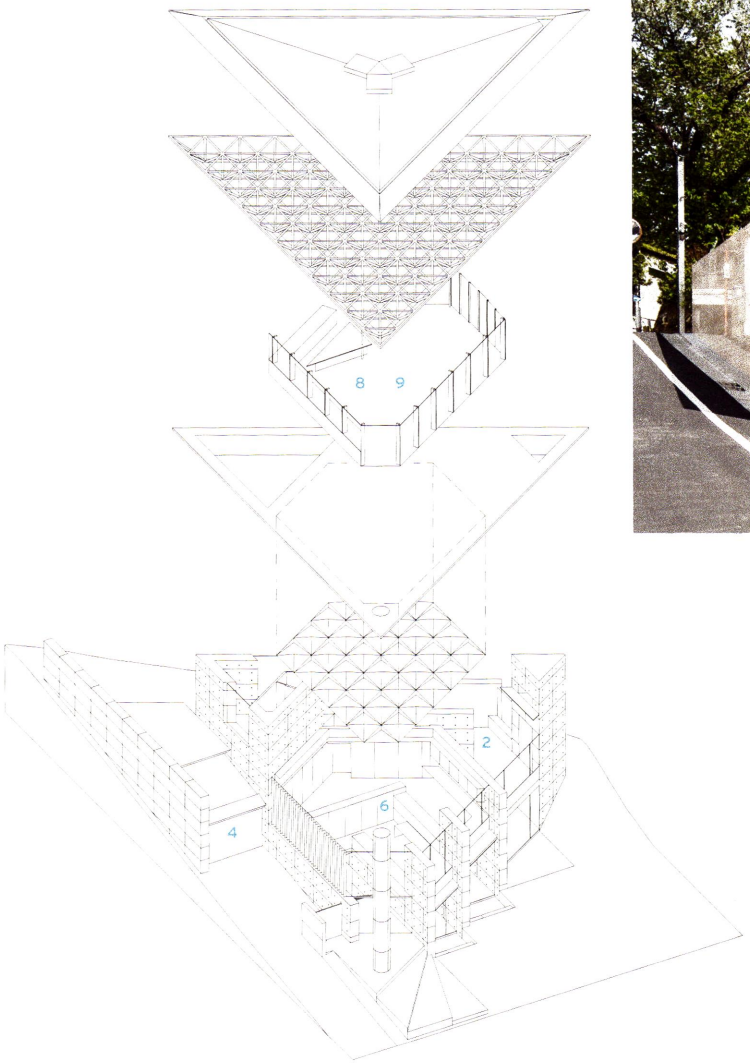
Integrated like pieces of a 3-D puzzle, both the home and office occupy sections of the building's first two levels. The uppermost level is entirely dedicated to residential space. Though connected internally, the two programs are divided and have separate street-level entrances. Taking advantage of the slope, Ban situated the door to the house near the site's



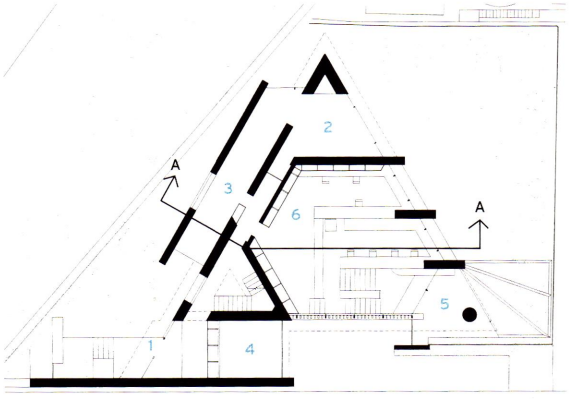
TRIPLE EFFECTS The house greets the street with a wall of Turkish travertine sourced and sliced in China (opposite). Behind that, wood louvers shield the office from view but allow natural light into the work space. Marking the center of the triangular roof, a trio of circular skylights brings daylight to the middle of the room (this page).

LEVELS OF DETAIL Tucked behind the travertine wall, the garage door is a single shutter of cedar imported from the United States (right). In the office (opposite), large plate-glass windows open to the garden while louvers and film-coated glass protect the client's privacy from the street. Built-in desks contribute to the room's openness.



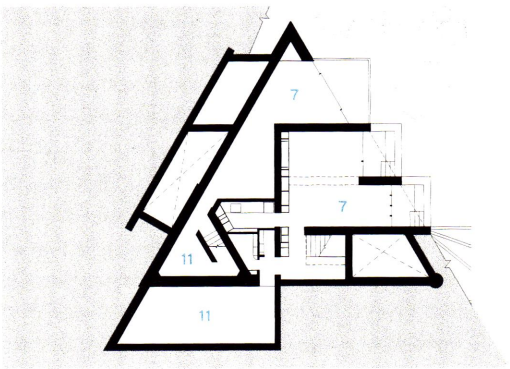


EXPLODED AXONOMETRIC DIAGRAM



FIRST-FLOOR PLAN

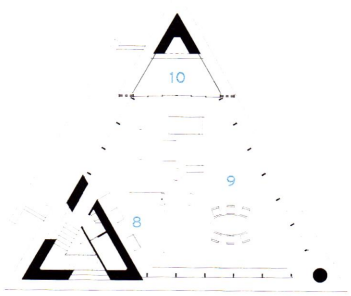
0 16 FT.
5 M.



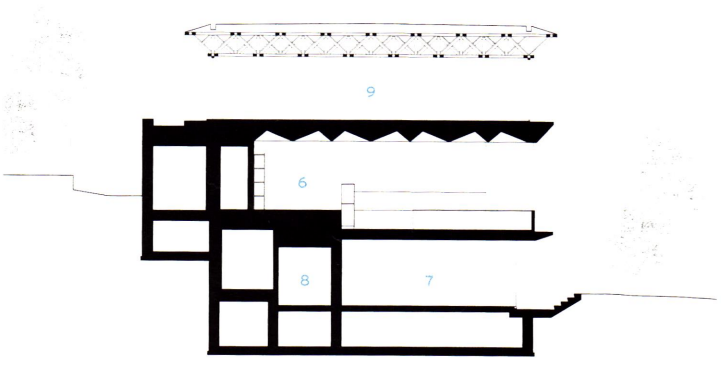
BASEMENT-FLOOR PLAN

1 RESIDENCE ENTRANCE
2 RESIDENCE
3 PRAYER ROOM
4 GARAGE
5 OFFICE ENTRANCE
6 OFFICE
7 MEETING ROOM
8 KITCHEN
9 LIVING/DINING ROOM
10 TERRACE
11 STORAGE





SECOND-FLOOR PLAN



SECTION A - A

high point on the east side, and the door to the office farther down the hill to the west. He created an area for off-street parking and a garage between these two entrances. The door to the house is buffered by a walled garden created by the landscape designer Seijun Nishihata, and opens into a foyer that leads to a triangular stair core. Beyond that, on the same level, is the residence, which includes a prayer room. The stairs ascend to a combined kitchen, dining, and living area, which opens onto a small terrace. On the office side, a stairway inside the entrance brings visitors and staff up to a hexagonally shaped work space, which comprises two desk-lined mezzanine levels that hug the slope and allow for an office kitchen and meeting rooms underneath.

Corresponding to the building's functional split are two different triangulated structural systems: a 3-D wooden space frame covering the living area and a reinforced concrete waffle slab crowning the workspace. Left exposed, these elements impart a distinct atmosphere to both home and office. While the residential space feels open and expansive, the office feels protected, as if carved out of the earth. Meticulously crafted down to the smallest details, both space frame and slab constructions were designed to facilitate building on the narrow street in front of the site.

This meant using small wood members and multiple concrete pours. Measuring 3 feet deep, the space frame is constructed of untreated 6-foot-long European pine beams. They come together neatly in star-shaped joints conceived by Ban for this project in collaboration with the Swiss structural timber specialist Hermann Blumer, the architect's regular consultant for wood joinery. Linking as many as nine elements without a glitch, the joints are secured invisibly by concealed metal plates. "Japan is heaven for construction," says Ban, grinning. At the room perimeter, the frame edges are reinforced with C-shaped steel channels that





conceal window shades and connect with slender, structural steel columns that double as mullions. A single 3-inch-diameter steel column, which offsets roof deflection and visually pins the triangular kitchen island in place, is the only vertical component in the middle of the room. The frame also transfers its load to the concrete elements that mark the corners of the triangular footprint: the stair core, the built-in barbeque, and a beefy, 3-foot-diameter column extending the height of the building.

Providing a column-free interior, the reinforced concrete waffle slab caps the main office space. Composed of three-dimensional triangular solids and voids measuring 2 feet at their apexes and 6 feet along each side, the dramatic ceiling has the crisp edges of folded origami paper. "The amount of concrete was more than the standard square waffle slab, but the formwork was much cheaper," comments Ban. Composed of just three triangular planes, each of the formwork's repeating units was easier to construct due partly to the shape's inherent stability.

Preserving the integrity of the concrete surface, Ban incorporated LED uplights into built-in storage lining the room and put task lamps on the desks. Upstairs, he mounted LED fixtures into the wood ceiling at the center point of each triangular frame. Building-wide, the architect limited himself to three main finish materials: oak for the floors and millwork, white-painted steel for sashes, and, of course, concrete. In the kitchen, marbleized acrylic resin counters top the triangular island and cabinetry.

In Tokyo, where streets are widened by the city, and property is subdivided by private landowners, triangular buildings are not unusual. But this was Ban's first structure with this strong scheme. Though born out of trouble-shooting for the future, Triangle House exemplifies the distinctive character and exquisite construction of Ban's architecture in the here and now. ■

credits

ARCHITECT: Shigeru Ban Architects – Shigeru Ban, principal; Nobutaka Hiraga, Grant Suzuki, Daisuke Sato, design team

ENGINEERS: Hoshino Architects & Engineers (structural); Chiku Engineering Consultants (m/e/p)

CONSULTANT: Sora Botanical Garden (landscape)

GENERAL CONTRACTOR: Shin

SIZE: 4,830 square feet

COST: withheld

COMPLETION DATE: December 2016

SOURCES

TRAVERTINE: Sanseki (road-side wall)

WOOD: Ueno Jyuken (spruce timber wall)

ROOFING: Japan Kenzai

WINDOWS: Sankyo Tateyama (aluminum frame)

CONCRETE FORMWORK: Toho Stage Craft



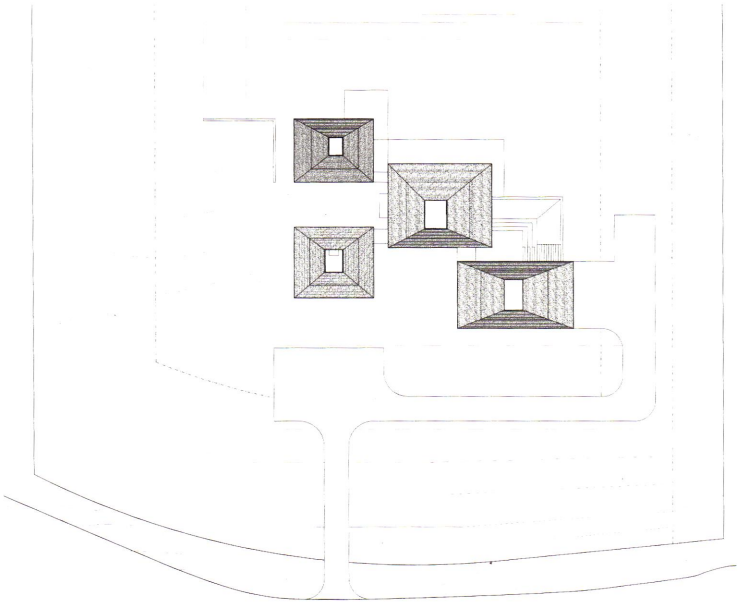


UPSTAIRS DOWNSTAIRS
Wrapping the interior of the home's concrete core (opposite, left), the stairs are made of cantilevered steel plates covered with oak veneer. The office meeting room (above) opens to a sunken terrace and the garden beyond. A Ban-designed paper-tube table and chairs defines the home's dining area on the building's top floor (right).

Underhill House | Matinecock, New York | Bates Masi + Architects

The Sum of Its Parts





SITE PLAN

0 30 FT. 9 M.

Three years after working with Bates Masi + Architects on a vacation home in Montauk, New York (RECORD, April 2012, page 68), Rick and Alicia Scanlon returned to the East Hampton–based firm to design a primary residence for their family of five, farther west on Long Island. They desired a location that would offer good schools and other conveniences of suburban life but also easy access to New York City. The couple selected a three-acre site in Matinecock, New York—a small residential community with 18th-century Quaker roots, in the Town of Oyster Bay. "I wanted to be right in the village," says Alicia. "Not way down a winding road." The property is also situated less than a mile from the Friends Academy, where their three children attend school.

In spite of its being entirely new construction, the house manages to blend seamlessly into its context on a residential street in close proximity to existing homes. "The first thing we wanted was to make sure we were sensitive to the neighborhood," says Alicia. "I didn't want to overbuild." In that vein, the clients also requested spaces that they would regularly occupy; there would be no formal parlors here. "We dissected the typical residential program and deciphered what they really needed," says firm partner Paul Masi, who led the design of the 6,300-square-foot project. "They use every inch of it."

Taking cues from older structures in the village, the house is clad in

A four-volume family home on Long Island reflects the quiet history of its surroundings.

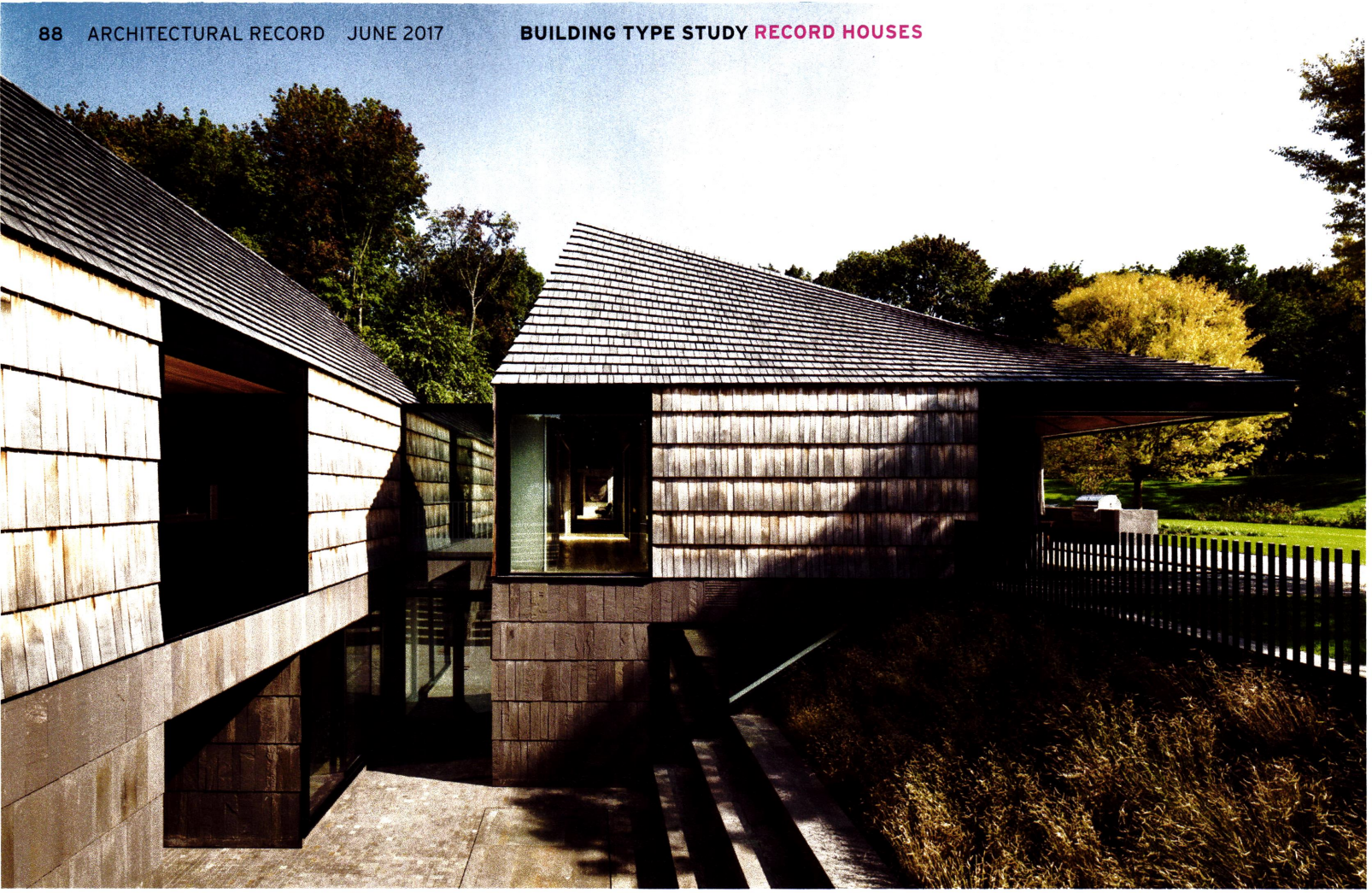
BY MIRIAM SITZ

PHOTOGRAPHY BY MICHAEL MORAN/OTTO





MEETINGHOUSE Situated on a three-acre corner plot with neighbors in close proximity, the house comprises four distinct structures (above) connected by interior passageways. The living room (left) opens fully to the backyard when an operable glazed wall recedes.





cedar shingles, weathered to a cool silver gray. Bluestone cut to similar dimensions as the shingles provides visual continuity as paving and cladding on below-grade areas. "I wanted it to be very subtle," says Alicia.

The family, who had lived in Singapore for more than 15 years prior to returning to the States and settling in Long Island, desired the new steel-frame building to be a welcoming space, suitable for entertaining. It also would evoke their former home in the tropical island nation by blurring the line between indoors and out. Masi conceived of the residence as a group of four separate but interconnected pavilions. At the heart of the cluster, the largest volume provides ample space for eating, entertaining, and relaxing. Family bedrooms are located in a second structure, including the parents' double-bath suite—complete with a private atrium—and children's rooms above, accessible via a stadium stair. Another section includes a guest suite and offices, while the fourth contains service areas, the garage, and a basement where a gym and game room lead out to a sunken terrace.

The architects placed courtyards, open to the sky, at the center of each space in order to funnel natural light into all sections of



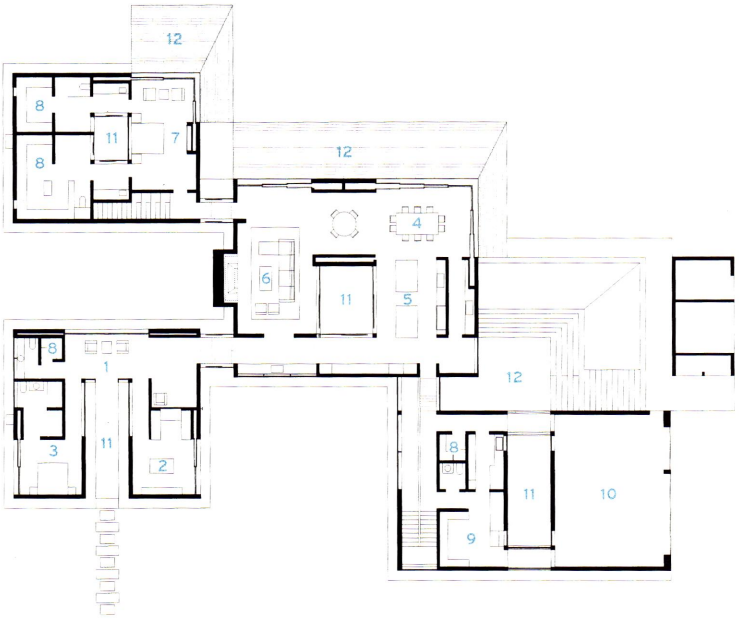
NEW PERSPECTIVES A sunken courtyard allows light to reach below-grade rooms (opposite, top). Large works of art are found throughout the house, including a portrait by Raphael Mazzucco in the entryway that provides a focal point for the long hall (opposite, bottom). Two islands—one stationary, the other on castors—anchor the large, airy kitchen (right). That space flows to the dining room and, when the glazed walls there are opened, to the lawn (bottom).

the house. The roofs around these insertions, which are higher on the north, street-facing side to retain privacy, take the form of an abstracted gable, recalling the shape of nearby buildings. Generous floor-to-ceiling glazing around the atriums and on select walls permits views across and through the residence. "The courtyard breaks it up just enough so there's some privacy, but I can still sort of sense where everybody is," says Alicia. Most of the window walls are operable, sliding into deep pockets. "They open up and, suddenly, you're in a landscape," says Masi. Butt-jointed glazing maintains this effect even when the windows are closed.

In deferring to the local vernacular, the architects emphasized the multifaceted character of natural and industrial materials. A restrained palette and sense of craft







GROUND-LEVEL PLAN

0 20 FT. 6 M.

1 ENTRY
2 OFFICE
3 GUEST SUITE
4 DINING ROOM
5 KITCHEN
6 LIVING ROOM
7 MASTER SUITE
8 CLOSET
9 MUD ROOM
10 GARAGE
11 COURTYARD
12 TERRACE





GREAT OUTDOORS The architects fashioned a bench from walnut wood—the same wood used in the cabinetry—for a courtyard just beyond a seating area near the house's main entrance (opposite, top). The corner of the master suite dissolves into the landscape when the two glazed walls are withdrawn (opposite, bottom). The buildings' roofs, which dip down toward the atriums, are lower on the sides facing the south lawn, maximizing privacy and capturing sunlight (above).

unify the diverse spaces of the house: oak boards line not only the floors but the ceilings and underscore the rectilinear geometry of each volume. Decorative metal straps, fastened across the wood staves overhead, like hoops on a wine barrel, radiate across the planks. Built-in storage throughout the main level has weathering-steel screens, picking up the thread of rustic metal, and outside, the design team used the same wood as the cabinets' to create a bench, nestled among a narrow grove of trees. "It's an interesting pursuit to see what the character of a material is and what its capabilities are," says Masi.

The Underhill House provided the architects with the refreshing opportunity to create a year-round residence, rather than the weekend houses for which the firm is particularly known. Balancing the need for both privacy and spaces that bring the family together on a daily basis, the design reflects the clients' vision for a good home life. Says Masi, "It's a place for people who really live here." ■

credits

ARCHITECT: Bates Masi + Architects – Paul Masi, design partner; Katherine Dalene Weil, Emily Ko, project architects; Victoria Pryor, interior designer

ENGINEER: Steven L Maresca

LANDSCAPE: TL Studio

GENERAL CONTRACTOR: Qualico Contracting

CLIENT: Rick and Alicia Scanlon

SIZE: 6,300 square feet

COST: withheld

COMPLETION DATE: October 2015

SOURCES

WINDOWS AND DOORS: Arcadia

WOOD CLADDING AND SHINGLES: TL Roofing & Sheet Metal

MASONRY: Tompkins Bluestone

LOCKSETS: Emtek, Linnea

PAINTS AND STAINS: Benjamin Moore

SOLID SURFACING: Corian

CABINETS AND CUSTOM WOODWORK: Ciuffo Cabinetry

OUTDOOR SEATING: B&B Italia

LIGHTING: Cooper Lighting, Delta Light, Element Lighting, Lutron, Sonneman

PLUMBING: Cifial, Kalista, Newport Brass

The Connected House | Boulogne-Billancourt, France | Jakob + MacFarlane Architects

Machine in the Garden

A suburban house integrates industrial and organic themes.

BY SUZANNE STEPHENS

PHOTOGRAPHY BY ROLAND HALBE



PHOTOGRAPHY: © PATRICE ZITO (THIS PAGE)

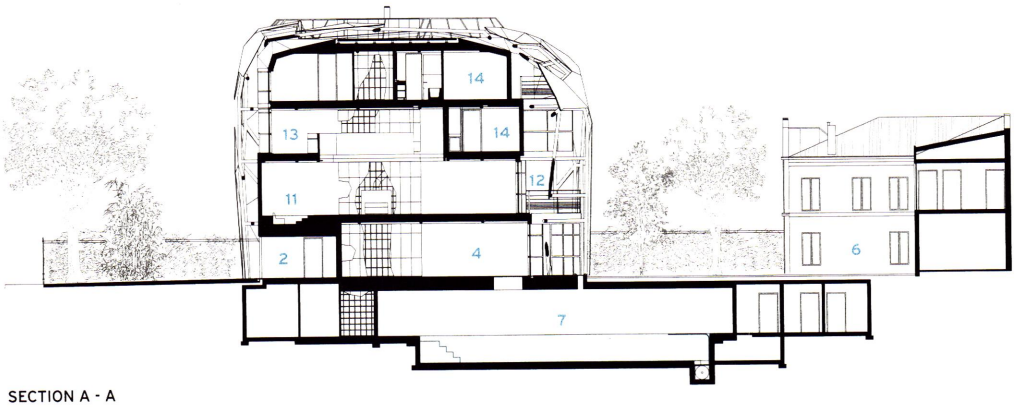
The shimmering, white metal pavilion emerges from its leafy residential setting as a quirky apparition. The 8,600-square-foot, four-story house sits on a ¼-acre property in Boulogne-Billancourt, an affluent suburb just west of Paris's Bois de Boulogne. A block away is Le Corbusier's Modernist apartment building Immeuble Molitor (1934), where the architect lived and had his office. Other avant-garde designers, such as Tony Garnier, August and Gustave Perret, and Robert Mallet-Stevens also left their mark in the district. "We felt this experimental 1930s tradition made our effort appropriate," says Brendan MacFarlane, of the French firm Jakob + MacFarlane Architects. Designed as one of several homes for an active family with almost-grown children, the assembly of steel and aluminum appears organic, as if it had sprung from some strange, podlike plant. "We responded to the forest of trees all around," says partner Dominique Jakob.

The two architects compare the division of spaces to a tree's growth rings, although in this case, the rings are delineated by three architectonic zones: the stair and chimney; the interior volumes for living; and the space between those volumes and the exterior armature. "We also loved the idea of exposing the structure on the outside," MacFarlane says about the tubular exoskeleton that supports the poured-concrete floors of the various levels. The design recalls the firm's animated expansion (named Les Turbulences) of the FRAC Center, a contemporary art museum in Orléans (RECORD, October 2013, page 78). In both cases, Jakob + MacFarlane employed an aluminum skin and a structure of steel tubes, 6½ inches in diameter. But whereas all the tubes in the museum were tongue-and-groove joints created by digital laser cutting, in the house, the smaller intermediate tubes in the middle are bolted for the sake of economy.

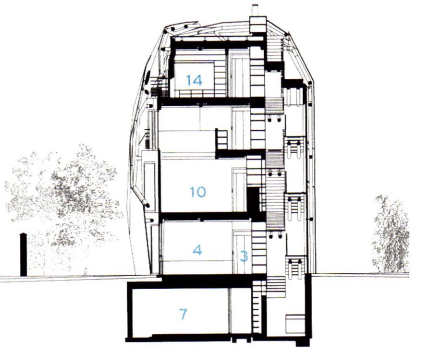
The entrance to the vertically organized dwelling, facing a quiet street, is unprepossessing. But inside the vestibule, an open-riser stair, edged by oak bookshelves, thrusts dramatically up toward treetops glimpsed through high windows. An aquarium for tropical fish, built into the corner of the staircase, arrests your attention as you come into the ground level, where the dining room and



AT THE EDGE On the outskirts of Paris (opposite), the the white steel-tube-and-aluminum-panel structure quirkily fits into a mixed grouping of apartment houses, villas, and sports facilities. The house opens onto a terrace at the rear of the property (right), where glazed sections among the concrete pavers allow glimpses of the swimming pool below.

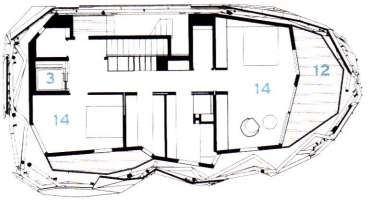


SECTION A - A

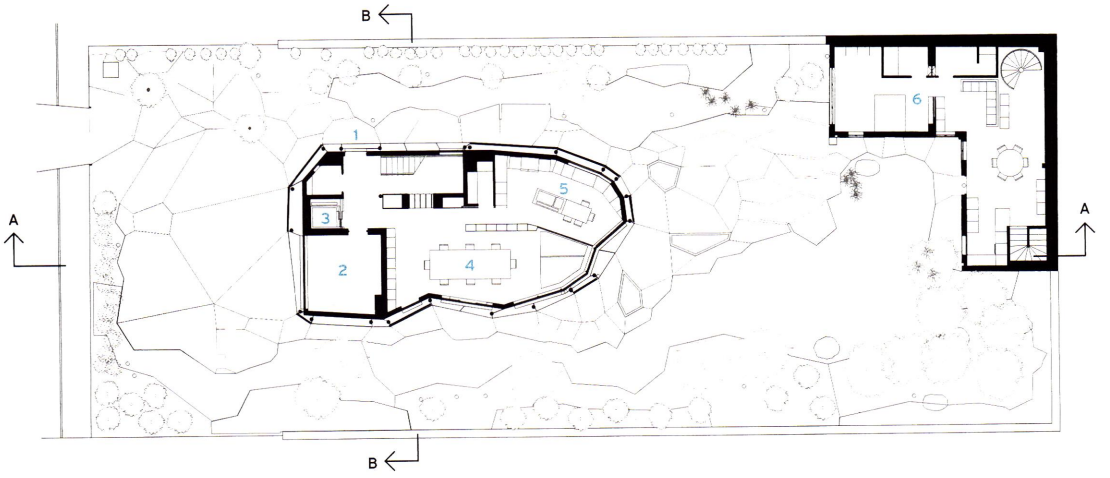


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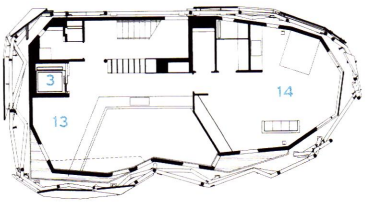
1 ENTRANCE
2 GARAGE
3 ELEVATOR
4 DINING AREA
5 KITCHEN
6 GUEST HOUSE
7 SWIMMING POOL
8 LOUNGE
9 GYM
10 LIVING ROOM
11 CONVERSATION PIT
12 BALCONY
13 OFFICE
14 BEDROOM



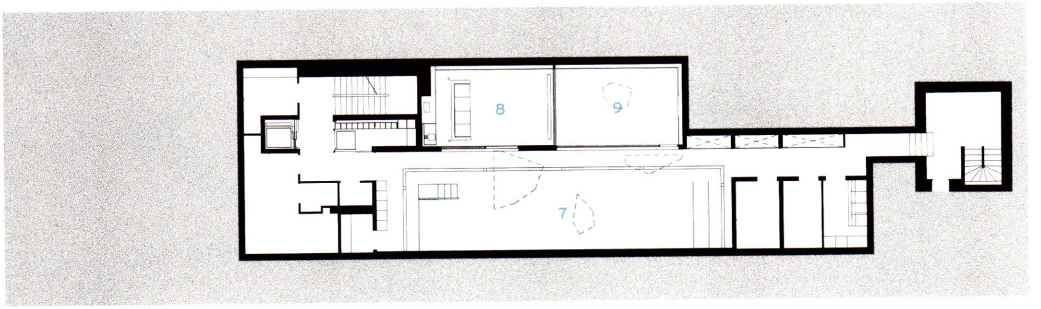
FOURTH-FLOOR PLAN



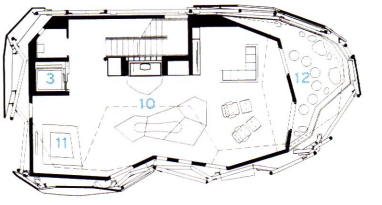
GROUND-FLOOR PLAN



THIRD-FLOOR PLAN

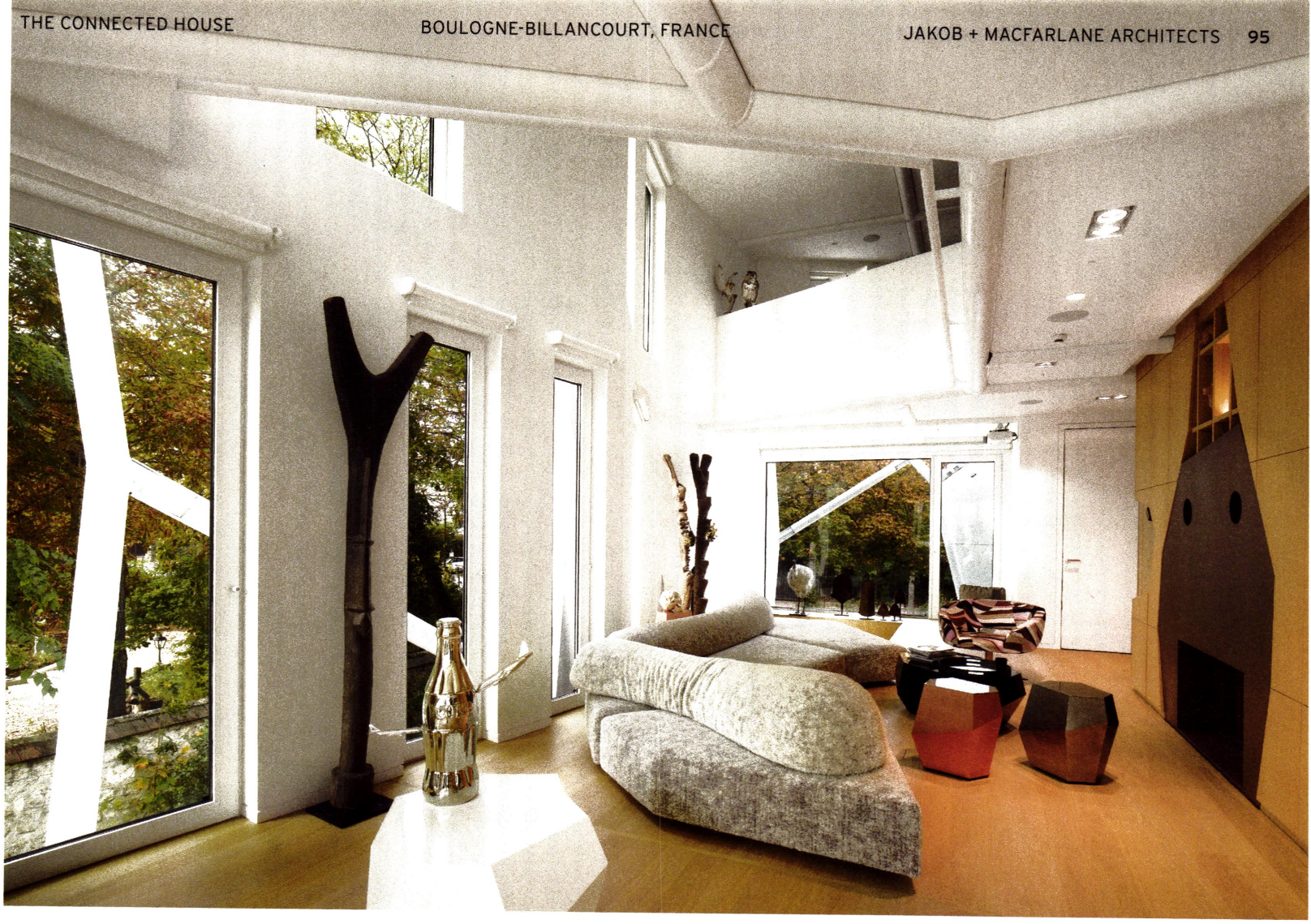


LOWER-FLOOR PLAN



SECOND-FLOOR PLAN





BIRD'S NEST In the two-story-high living level, elevated above the garage and dining and kitchen areas, a sectional sofa and a chair upholstered in Pucci fabric are arranged around the playfully designed fireplace (above). At the street level, the garage, tucked within the white carapace of tubes and panels, is almost hidden (right).

kitchen extend out horizontally to a small landscaped garden at the rear. At the far end of the dining table is a small sitting area where you can look down through a glazed aperture in the floor to a swimming pool below. The effect is like gazing at a large aquarium for swimmers, an intriguing counterpoint to the smaller one at the entrance.

On the next level, the architects created a two-story height by cutting into the third floor to create an angled mezzanine for a home office. It, in turn, overlooks discrete sitting areas, including a sunken conversation pit. "The owners really like that 1960s look," says MacFarlane, a predilection underscored by an undulating sectional sofa and a chair covered in Pucci fabric.

Bedrooms on the third and fourth levels can be reached by a small elevator as well as by the stair. Here, as elsewhere, the orthogonal plan dematerializes at the edges to yield oddly shaped terraces framed by tubes and offering bird's-eye views of the neighborhood. "We wanted to see nature without being seen," says the wife. "Also, light filters in everywhere in the house, from the pool to the double-height salon to our bedroom."

An unassuming late 19th-century villa sits at the rear of the property, where an older couple have lived for a long time on the top two floors while the new owners use the villa's lower levels for extra bedrooms and service spaces.





The architects physically linked these existing living quarters to the new house by a subterranean level containing the pool, an exercise area, and a screening room under the landscaped rear lawn and patio. You can see why Jakob + MacFarlane call this the "Connected House." There are electronic ties as well: the latest security and mechanical controls let the owners stay connected even when they're away. Three geothermal wells provide another link, literally to the earth, for heating and cooling.

While the project displays the latest in technical construction, the architecture seems to owe something to historical antecedents: the weblike tubes climbing the exterior evoke the early modern metalwork of the Art Nouveau architect Hector Guimard for his Paris metro stations, and Eugene-Emanuel Viollet-le-Duc's V-shaped iron structural elements for his famous unbuilt concert hall of 1864. Whether or not Jakob + MacFarlane's three-dimensional steel matrix for the domestic sphere will similarly inspire future architects, the integration of the machinelike and the organic is beguiling, if idiosyncratic. ■

SIMPLY NATURAL The dining area and kitchen on the ground level (above) are separated by built-in cabinets of French oak. The stair at the entrance (opposite) amply features this warm-colored wood, a contrast to the white metal bannisters and structure.

credits

ARCHITECT: Jakob + MacFarlane Architects – Dominique Jakob and Brendan MacFarlane, partners; Romain de Santis, Thomas Sablayrolles, Axel Adam, Ken Sogawa, Antoine Heersant, team

ENGINEERS: Batiserf (structural); Inex (m/e)

CONSULTANTS: Bollinger and Grohman (facade); Cap paysage (landscape)

SIZE: 8,600 square feet

COST: withheld

COMPLETION DATE: December 2016

SOURCES

METAL FRAME WINDOWS: Schüco

SKYLIGHTS: Glazing Vision

ELEVATOR: Kone





Casas Pareadas | Santiago, Chile | Smiljan Radic

Two of a Kind

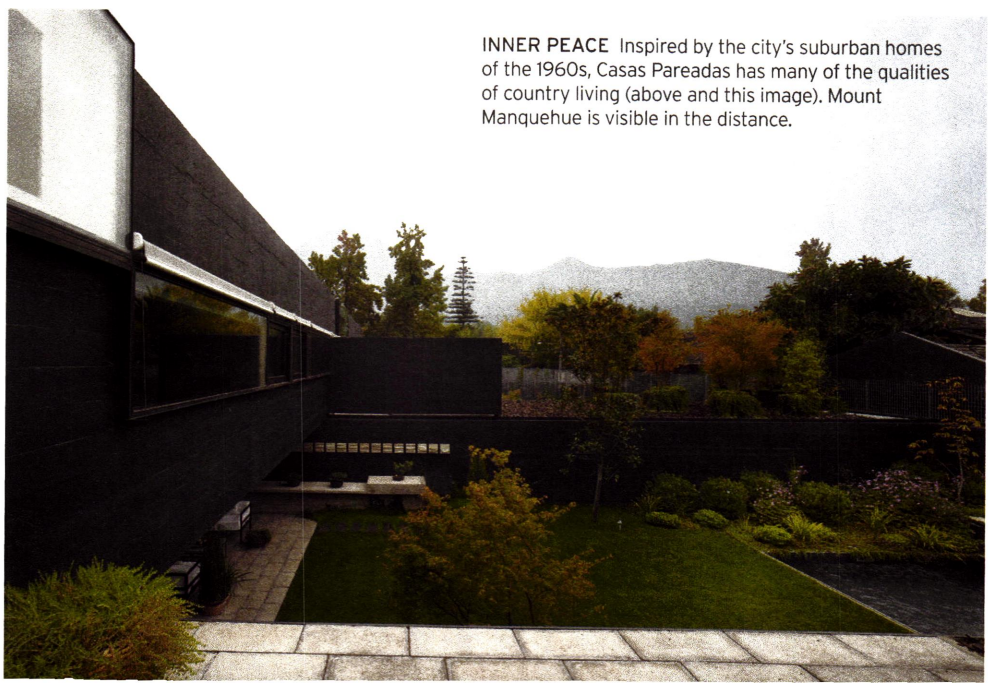
In the midst of a bustling metropolis, a pair of linked houses form an urban oasis, bringing a new dimension to duplex living.

BY TOM HENNIGAN

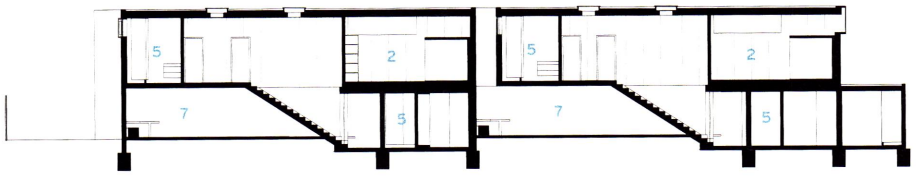
PHOTOGRAPHY BY ROLAND HALBE

When friends and ad-agency partners Rodrigo Mizala and Juan Martínez decided to construct neighboring residences for themselves and their families, they came at the project with a common fundamental desire: they hoped to capture the spirit of a vacation home, but instead of building in the mountains or at the beach, they would do it in Santiago, Chile's pulsating capital.

While the two houses would be completely separate, each would convey a communal ethos. "We wanted homes centered on a space our families could share—where we could cook, eat, and relax together as we do when we are on holiday," says Mizala. "Our idea was

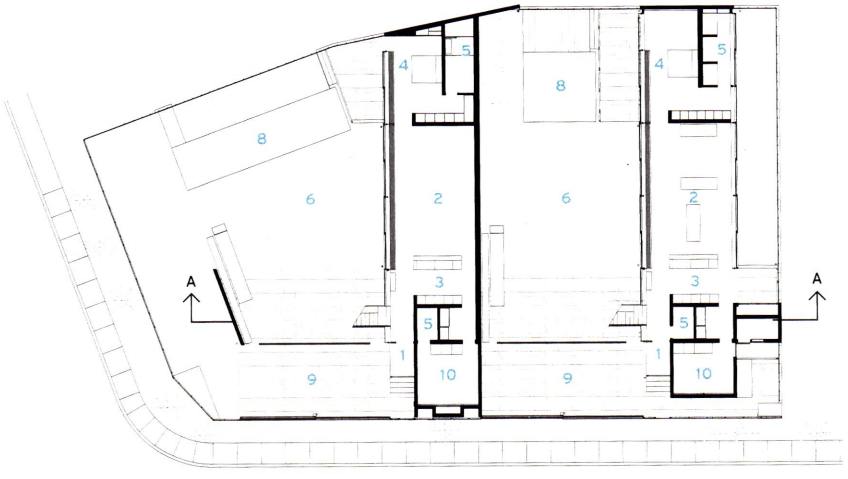


INNER PEACE Inspired by the city's suburban homes of the 1960s, Casas Pareadas has many of the qualities of country living (above and this image). Mount Manquehue is visible in the distance.

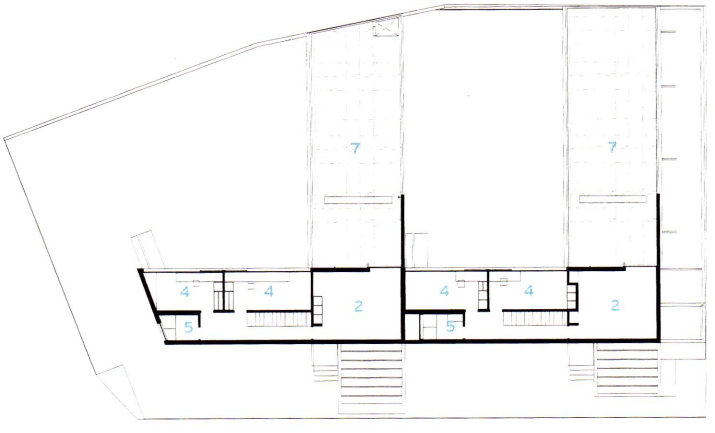


SECTION A - A

0 10 FT.
3 M.



LEVEL-ONE PLAN



LEVEL-TWO PLAN

0 16 FT.
5 M.

1 ENTRY
2 LIVING
3 KITCHEN
4 BEDROOM
5 BATHROOM
6 GARDEN
7 TERRACE
8 POOL
9 PARKING
10 SERVICES



to break down the walls between the kitchen, dining, and living rooms—walls that often end up creating dead spaces." The model Mizala had in mind was his own summer house in the pretty town of Puerto Varas, 600 miles south of the capital in Chile's Alpine Lake District where he, his wife, and teenage children reconnect, thanks in part to the intimate living quarters and its informal, open plan.

Taking on the two clients' request for a tranquil retreat in the middle of the city, Santiago-based Smiljan Radic (RECORD, December 2008, page 106) envisioned the Casas Pareadas—or Paired Houses—as three interconnected volumes which, split by a dividing wall, contain two distinct, though mirror-image homes—Casa A and Casa B. Seeking to create a "microenvironment" with each abode, Radic looked for inspiration to the low-slung 1960s houses that dot Santiago, wrapping the domestically scaled building around generous gardens.

By placing two rectilinear lower volumes parallel to one another and topping them with a perpendicularly oriented bar, Radic set up a dynamic dialogue between the interiors and exteriors. This conversation was further charged by his decision to sink the lower spaces a couple of feet into the ground—a move that brings the scale down and imbues the house with an organic quality, making it seem as if it sprouted out of its lush site. The interplay between the volumes creates a variety of outdoor spaces. Two covered patios are formed where the upper level straddles a void, and lead out to the gardens beyond, while terraces on the roofs of the lower levels offer views to Mount Manquehue, the highest peak in the Santiago Basin.

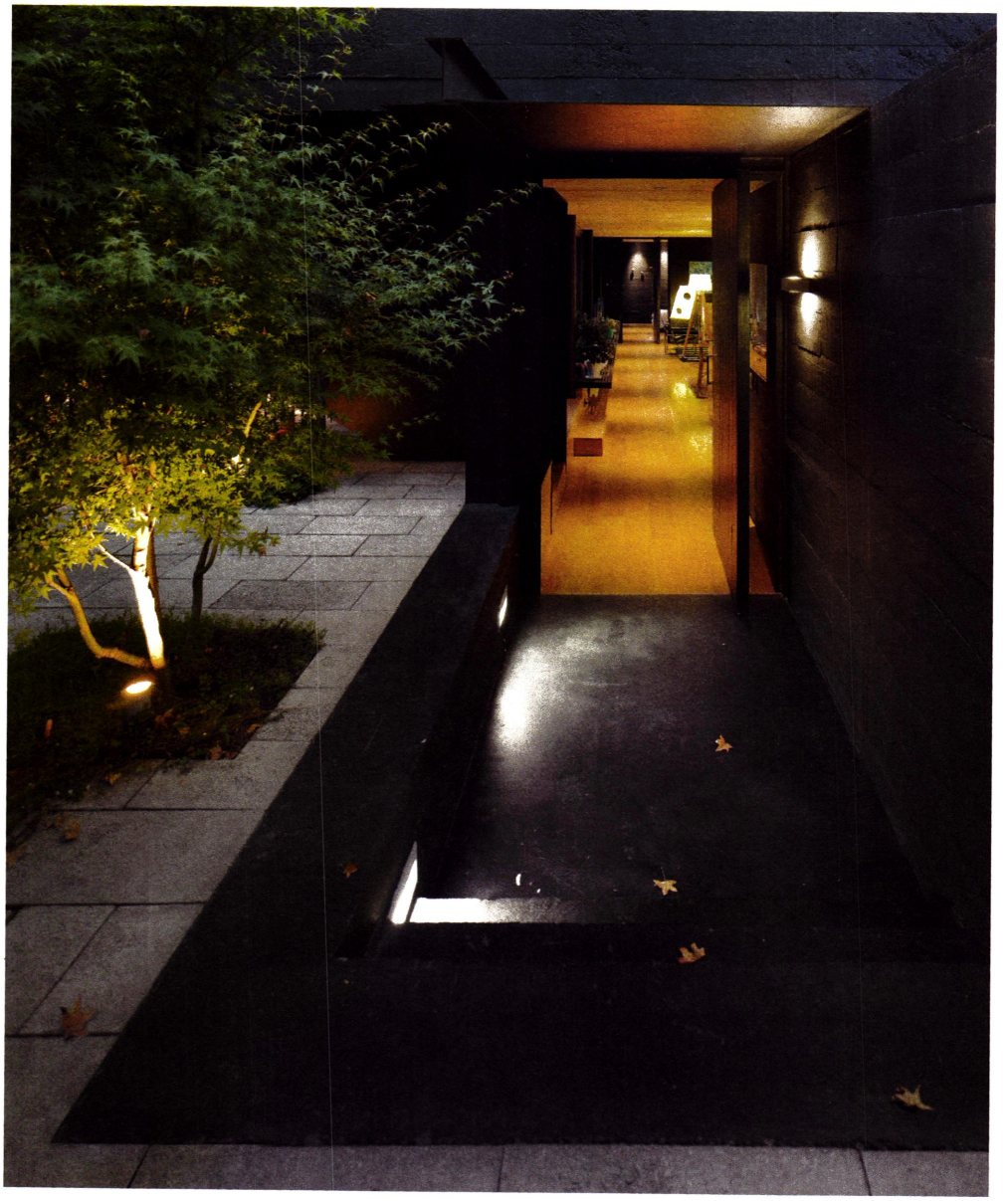


STIFF UPPER LIP The top bar-shaped level (above) has a discreet presence on the street. This volume creates covered terraces (visible through the driveway), which are illuminated by skylights (opposite). One of the main entries (right) leads into the warm interiors.

The relaxed atmosphere articulated by the spatial organization is further enhanced by Radic's use of materials. Terraces employ unadorned white flagstones. Interior floors and ceilings are of warm Alamo wood, and concrete walls, which carry from the exteriors into the living spaces, are painted a warm charcoal black, standing in contrast to the current vogue among Santiago's elite for immaculate white interiors.

This project is not the first that Mizala and Martínez built together, having previously erected a three-unit residence in Santiago for themselves and a third friend. Searching for a designer for what would become Casas Pareadas, the pair was drawn to Radic, the architect behind the much ballyhooed 2007 Restaurant Mestizo, whose breezy monumentalism graces a new city park. A subsequent visit to one of Radic's private residences ended their quest. "I was fascinated by Smiljan's use of materials to create ambience," says Rizala, a graphic designer by training. "He finds beauty in the primitive sophistication of ordinary workaday materials, so that they bolster the informal spirit of the house."

The finished product the architect delivered differs very little from the first wooden model he showed the clients just a month after first meeting them. Not surprisingly, the houses' emotional centers are on the lower levels. Here, column-free spaces contain the expansive integrated living areas that Mizala and Martínez so dearly wanted. Entered off the low, unassuming street-fac-





ing facade through a small foyer, each of the residences' social areas flows from the kitchen and on into the dining and sitting areas. In each, beyond a poured-in-place concrete wall, lies the master bedroom, which spills out onto a sunken terrace at the end of the garden by the swimming pool. Upstairs, the Alamo wood brings a glow to the bedrooms and ateliers, which is amplified by high ceilings and abundant daylighting.

The only significant difference between the two otherwise identical houses is found on the lower levels. Casa A is pulled away from the wall of its other neighboring property, allowing for floor-to-ceiling windows along both sides of the living area. Planning and space restrictions meant Casa B's lower level is attached to the wall that divides the units, so it has glazing exclusively on the north elevation, facing its own private garden.







INSIDE OUT
Light and garden views flow into Casa A through generous glazing in the living room (above and top) and bedroom (right).



HOME SWEET HOME Alamo wood brings a honey glow to interiors, most notably in Casa B's living room (above), atelier (opposite, top), and stair hall (opposite, bottom).







Completed in 2014, the residence has evolved, just as planned, as an urban oasis for the two families. "Smiljan has created a home where you always feel relaxed," says Rizala. "It makes for a wonderful family life." For Radic, whose international profile has risen since Casas Pareadas was completed, the design displays the restraint that is one of his signatures. "The project offers an austere facade to the street, so as not to disrupt the urban fabric," he says, describing the inward-looking compound. "This idea of austerity and a building's impact on the public sphere has been there in my work from the beginning." ■

Tom Hennigan, the South America correspondent for the Irish Times, *is based in São Paulo.*

credits

ARCHITECT: Smiljan Radic

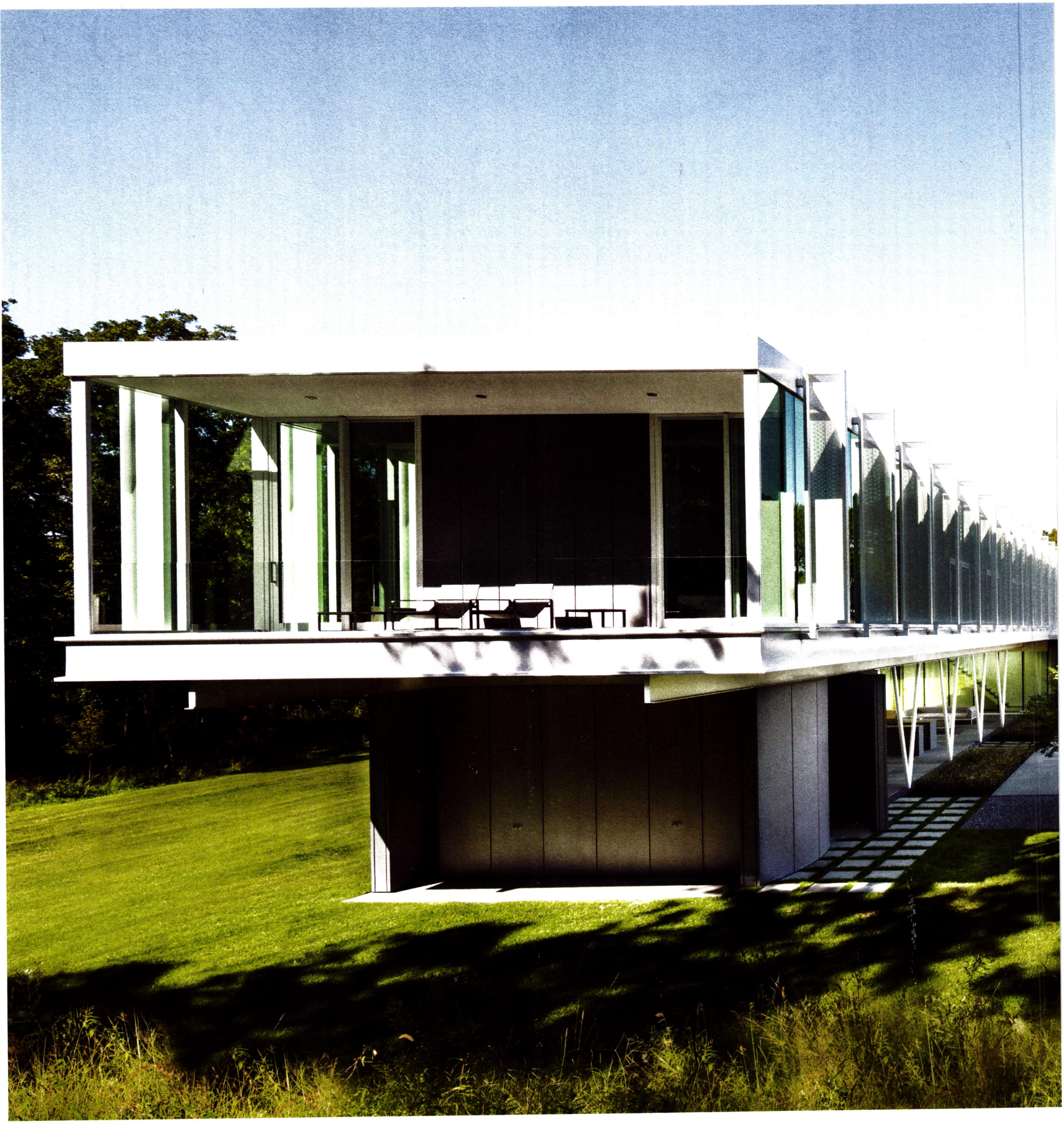
COLLABORATING ARCHITECT: Loreto Lyon

ENGINEER: B y B ingeniería (structural)

SIZE: Casa A, 2,640 square feet; Casa B, 2,580 square feet

COST: withheld

COMPLETION DATE: 2014



Bar House | East Hampton, New York | Audrey Matlock Architect

Relaxed Fit

An architect shapes both structure and landscape to create a meticulously detailed but informal weekend house.

BY JOANN GONCHAR, AIA

PHOTOGRAPHY BY PETER AARON



Rigorous—that's the adjective that comes to mind to describe a refined but relaxed weekend house by New York architect Audrey Matlock in East Hampton, Long Island. Matlock has designed the L-shaped modernist structure—with its two wings supported on slender V-shaped steel pilotis—down to the smallest of elements. It is so precisely designed that, despite its undeniably large size (10,200 square feet), it seems to barely touch its site.

This effect is achieved through the manipulation of any number of details, like tapering the overhanging roof structure so that it appears light and razor thin, or shielding the east- and west-facing glazing with perforated brise soleils, which lend the house a sense of permeability—or covering one roof with shaggy, tall grasses, to soften the edges of the architecture.

Even more striking than the precise assemblage of these elements are the relationship between the house and its surroundings and the treatment of exterior space as an extension of the architecture. The steel structure's two single-story glass- and zinc-clad linear volumes—one at grade containing the main living spaces and the other elevated and enclosing the family's bedrooms, among other spaces—intersect at 90 degrees. The composition defines a pair of outdoor rooms: a pool area embraced within the arms of the L and an adjacent sheltered terrace, slipped beneath the bedroom bar, that includes an open-air kitchen.

The emphasis on the outdoors reflects the priorities of the Brooklyn-based owners, a CEO in the education-technology sector and his wife, a former corporate communications executive. They had originally planned to buy a house on Long Island's east end. During their search, they saw one for sale that Matlock had designed, which they liked, but found its site unappealing. So they decided to look for a property where she could build a structure that would have high ceilings, a sense of openness, and daylight. They also wanted a lap pool, a tennis court, plenty of open space for their two young children, and a workshop where the husband—an avid fisherman—could make his own flies. Her clients, says Matlock, were attracted to the Hamptons for its natural assets, not its much-publicized social scene.

The couple eventually purchased 13 acres in

HIGH DEFINITION The house's two piloti-supported pavilions—one at grade and the other elevated—meet at 90 degrees to help define the surrounding landscape, including a pool area embraced in the arms of the resulting L shape.





East Hampton's Northwest Woods. Matlock positioned the house in the southeast corner of the property, a spot that was practically predetermined because of protected wetlands and a town-mandated location for the driveway. But, she says, the location was opportune, since this edge bordered a 500-acre public nature preserve encompassing hiking trails, a freshwater pond, and a forest of oak and pine. In addition it offered a significant slope and the opportunity to "engage the land" by partially hiding the garage below grade. Matlock took the same approach with the tennis court, tucking it behind an ivy-covered retaining wall, "so that it didn't look as if an aircraft carrier had landed on the lawn," she says.

Within the house, the two elongated wings have markedly different characters. The upper one has discrete rooms, including an office, a gym, and a den—in addition to bedrooms—lined up along a windowed corridor. Meanwhile, the interior of the lower volume, which contains a kitchen with bar-height seating at its light-gray marble counter top, a dining area

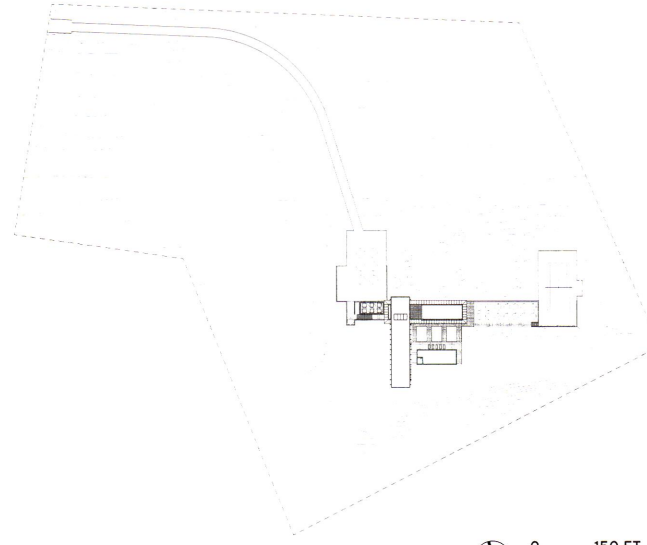


FRINGE BENEFITS
Tall fountain grasses in the pool area (opposite, top) soften the architecture's rectilinear edges. Bluestone pavers, used here and at the terrace tucked under the upper level (opposite, bottom) continue indoors to the main living space. The free-flowing room, divided by a double-sided hearth, has a glazed south-facing wall (above) and one that is largely opaque opposite it (right). It was designed to showcase large-scale contemporary painting, including work by (left to right) Adam Henry, Joyce Pensato, and Heimo Zobernig.



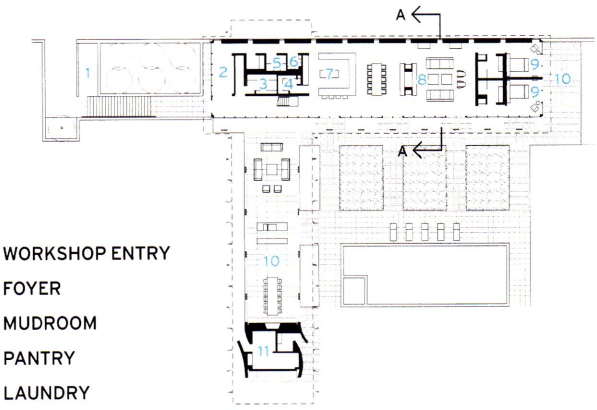


COMMON LANGUAGE A skylit and precisely detailed open-riser stair (above) connects the lower and upper levels. The treads, as well as the floors of the upper wing, including those of the master bedroom (opposite) are made of walnut. This material choice continues the strategy used below, with a dark base to anchor the other mostly white, light-reflective surfaces.



SITE PLAN

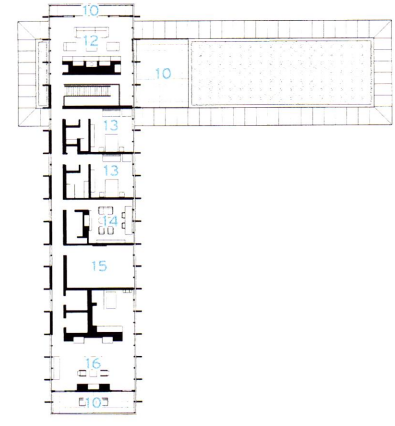
0 150 FT. 50 M.



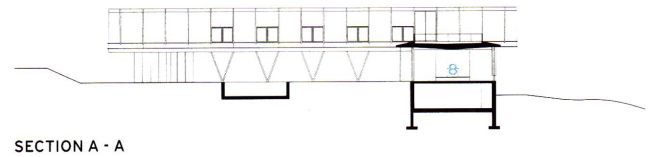
1 WORKSHOP ENTRY
2 FOYER
3 MUDROOM
4 PANTRY
5 LAUNDRY
6 WINE ROOM
7 KITCHEN
8 LIVING ROOM
9 GUEST ROOM
10 TERRACE
11 POOL HOUSE
12 FAMILY ROOM
13 CHILD'S BEDROOM
14 OFFICE
15 GYM
16 MASTER SUITE

GROUND-FLOOR PLAN

0 30 FT. 10 M.



UPPER-FLOOR PLAN



SECTION A - A



with a custom oakwood table, and a living room, is primarily a free-flowing space, 28 feet wide and 64 feet long.

Though this main living zone does not have conventional partitioned rooms, it is highly articulated. Its most conspicuous space-defining element is a monumental and minimal fireplace with a black basalt base that faces both the living and dining areas. But there is also a subtler strategy at work: a 4-foot module that governs the entire house. The dimension is expressed in a number of ways, including the attenuated V-shaped steel pilotis placed every 12 feet on center and visible from the interior through a south-facing expanse of glass looking out onto the pool. The module is also manifest in the drywall ceiling, which consists of alternating 4-foot- and 8-foot-wide sections running between the steel beams of the roof. The narrower sections are flat, while the wider ones are gently canted like the underside of a shallow butterfly roof.

This A-B-A-B rhythm is reinforced by a secondary vertical structure of square pipe columns that sits just inside the glazed south wall and along the mostly opaque north wall. There, tall and narrow windows are spaced 12 feet apart. The approach yields surfaces suitable for showcasing art, specifically large paintings by contemporary artists, which the clients have recently begun collecting. But it also creates visual interest, even if nothing were to be displayed there, explains Matlock. "So often, the art is an afterthought," she says.

The outcome is a living space with a sense of orderly calm. Daylight seems to fill the room—a feeling enhanced by its mostly white-painted interior, including the walls, the ceiling, and the structure. These elements are grounded by the dark bluestone floor—a material that continues outdoors (along with the 4-foot module) to the pool area and the adjacent terrace. Here Matlock has combined the stone with rectilinear planting beds of tall fountain grasses like those on the roof, while a grove of pear trees extends the formal order of the house toward the tennis courts.

Matlock's landscape choices, like her many other carefully considered moves, help give the house a light and delicate presence on its site while making it a compelling object within nature. It all comes off as effortless, which of course it was not. "Building a minimal house is much more difficult," says the architect. "But it's the kind of fascinating puzzle I thrive on." ■

credits

ARCHITECT: Audrey Matlock Architect – Audrey Matlock, design partner; Monica Franklin, Derek Metz, Darshin Van Parjis, Rohan Cherayil, design team

CONSULTANTS: BuroHappold Engineering (m/e/p, structure, curtain wall, lighting); Site Design Resources, The Laurel Group (landscape); Elvan Arolat (interiors); Barad (audiovisual)

GENERAL CONTRACTOR: Lettieri Construction

SIZE: 10,200 square feet

COST: withheld

COMPLETION DATE: October 2016

SOURCES

ZINC PANELS: ALPOLIC

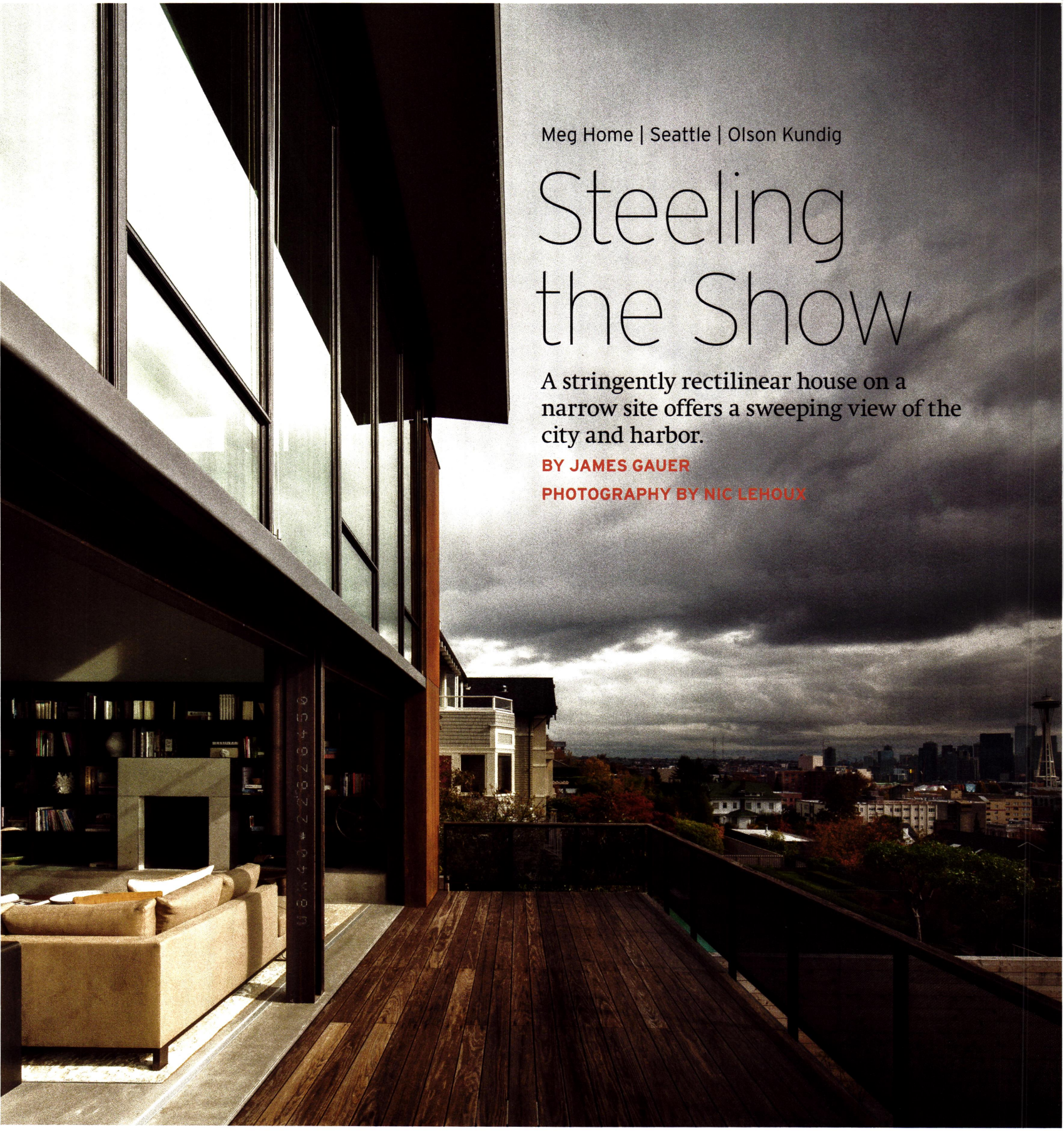
CURTAIN WALL: EFCO

GLAZING: Viracon

SKYLIGHTS: Solar Innovations

PAINT: Benjamin Moore

LIGHTING AND CONTROLS: Feelux, KKDC, Hera, USAI, ERCO, Artemide, FLOS, BK Lighting, Lutron



Meg Home | Seattle | Olson Kundig

Steeling the Show

A stringently rectilinear house on a narrow site offers a sweeping view of the city and harbor.

BY JAMES GAUER

PHOTOGRAPHY BY NIC LEHOUX



YOU CAN SEE MILES On the narrow ⅕-acre site with rocky additions (above), Olson Kundig took advantage of views of Elliott Bay and downtown Seattle. The bedrooms are at ground level, with a double-height living and dining level above. Through retractable windows there, the deck and the panorama are accessible (opposite). A covered walkway leads to the garage and workshop.

Gianna Puerini and Brian Valentine interviewed five architects to design their house in Seattle's Queen Anne area—a picturesque enclave on a hill high above downtown—before choosing Tom Kundig, who lives in the same neighborhood. "It just felt right," says Puerini, a vice president of Amazon Go. She and Valentine, a CEO of a startup that converts food waste to fertilizer, told Kundig, "We wanted what he did, but we wanted it to be our home. He got it."

The architect has some experience with houses, having completed more than 75 of them in a career that spans three decades. And he continues to design them even though his firm, Olson Kundig, now has a staff of 150 and takes on larger commissions around the globe. "I've always enjoyed smaller, more intimate projects," he says. "They inform the larger ones."

The most celebrated of Kundig's residential works, such as a studio called the Brain (2001), the Stilt Cabin (RECORD, April 2006, page 92), and Montecito Residence (RECORD, May 2009, page 148), tend to be free-standing pavilions in spectacular landscapes. By contrast, this one is a discreet intervention on a constrained lot in a century-old cityscape. Asked how these site conditions affected his design process, Kundig replies, "My focus is always on context, whether natural or urban. From that, you derive the necessary information to help shape the building appropriately." This approach led him to a scheme that takes full advantage of a sloped site offering both frontage on a handsome street and a 180-degree view of the Seattle skyline and Puget Sound.

With two stories visible in front but three in back, where the grade is lower, the 6,050-square-foot dwelling has two scales: smaller and subtler where it addresses the residential street, bigger and bolder where it takes in the panoramic prospect. To reconcile this duality, explains Kundig, "We tried to balance transparency with a sheltering sense of refuge. It's the yin and the yang."

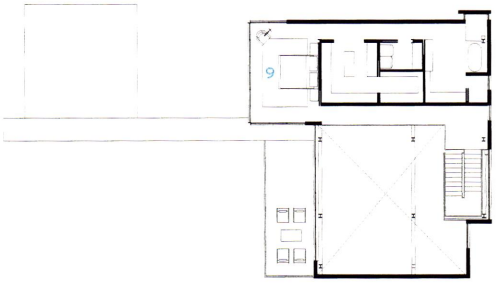
The architect thoughtfully aligned the house with its neighbors by setting it farther back from the sidewalk than zoning regulations required. He also placed the entry sequence off to one side. These moves yielded a large, private garden shaded by two mature Japanese maples and shielded from the street by a yew hedge. Planning is functional if less artful at the back of the site, where a covered walkway, connecting to a green-roofed garage and studio, divides an auto court from a lawn.

Massing consists of one primary volume rising from a basement that negotiates the grade change, with a smaller secondary volume projecting out from the upper level. Hovering above, a curved roof dips down asymmetrically to protect the recessed front door at the corner. Exterior walls are mostly steel and concrete at the sides, providing privacy, and largely glass at the front and back, opening sight lines between the sheltered outdoor room on the street side to the north and the sweeping city and water view to the south.

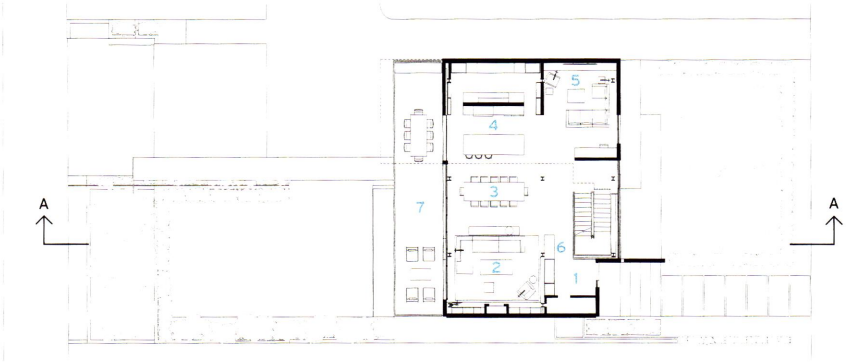
Inside, three parallel frames of steel columns and beams delineate



LOW PROFILE From the street, the house appears to be a two-story bungalow (left) hidden behind Japanese maples and a yew hedge. Inside, however, it opens up dramatically to the view. The living area (opposite, top) adjoins a dining area (opposite, bottom), while the kitchen is inserted beneath the bedroom.



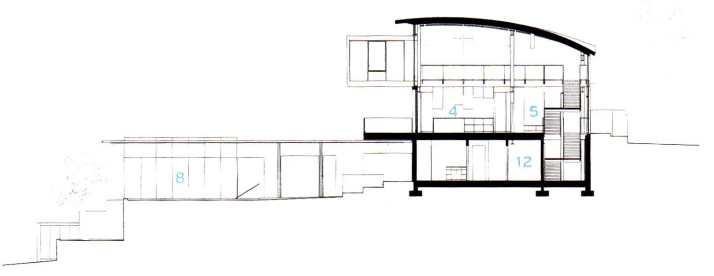
UPPER-LEVEL PLAN



MAIN-LEVEL PLAN



LOWER-LEVEL PLAN 0 16 FT. 5 M.



SECTION A - A

two spatial layers, arranged in an open plan, while a ceiling that conforms to the shape of the vaulted roof establishes a volumetric hierarchy in section. At the front, a vestibule opens onto a stair hall and a media alcove, both facing the garden. At the back, overlooking the vast vista, are a kitchen and a show-stopping double-height living and dining room, where a manually operated system of pulleys and counterweights lifts an expansive window wall to provide access to a deck spanning the building's entire 50-foot width. On the lower level, nestled into the hillside, are three guest rooms. On the upper level is a master suite whose cantilevered bedroom, wrapped in glass, forms a vertiginous perch from which to contemplate the sea and city beyond.

Materials, finishes, and details adhere to the elemental yet elegant architectural vernacular Kundig has developed over many years. Steel, both weathering and blackened, is ubiquitous. It appears not only in the articulated structure but also in cladding, sash, cabinetry, fittings, and in the trademark wheel that raises and lowers the retractable glass wall. Rust, welds,

1 ENTRANCE
2 LIVING ROOM
3 DINING AREA
4 KITCHEN/PANTRY
5 MEDIA
6 WINE STORAGE
7 DECK
8 WORKSHOP/GARAGE
9 MASTER BEDROOM
10 GUEST ROOM
11 EXERCISE/CRAFT
12 MECHANICAL









ON A LEDGE The master bedroom cantilevers over the deck to take in the view (left). Open-riser stairs at the entrance connect the three levels without blocking light, or the sense of interior space.

and shop markings on exposed columns and beams remain intentionally visible. Concrete's strong supporting role emerges in board-formed walls and lightly polished floors. Millwork, stair treads, and upper-level flooring are buffed fir plywood. Despite the contextually constricted character of this project, Kundig still evokes and even fulfills Le Corbusier's aspiration "to establish a play between crudity and finesse . . . to make beauty by contrast."

The clients' aesthetic preferences invert gender stereotypes. Puerini loves modernism. "I'm all about straight lines and right angles," she says with a laugh. But Valentine wanted a softer touch. "I asked for the curved roof," he explains. "It gives all the hard edges below a more human, organic quality." Their shared passion for Seattle's football team, the Seahawks, inspired the roof's parabolic profile, mimicking the arc of a pass thrown by star quarterback Russell Wilson. It's an apt metaphor for muscular architecture of restrained power and grace. ■

James Gauer, an architect and author based in Victoria, BC; Chicago; and San Miguel de Allende, Mexico, contributes frequently to RECORD.

credits

ARCHITECT: Olson Kundig – Tom Kundig, design principal; Angus MacGregor, project manager; Justin Helmbrecht, project architect (schematic design and design development); Hayden Robinson, project architect (contract documents); Debbie Kennedy, interior designer

ENGINEERS: MCE (structural); Coughlin Porter Lundeen (civil)

CONSULTANTS: DM Ohashi Landscape Services (landscape); Veronika Batho-Demelius (lighting)

GENERAL CONTRACTOR: Schuchart Dow

CLIENTS: Brian Valentine and Gianna Puerini

SIZE: 6,050 square feet

COST: withheld

COMPLETION DATE: May 2016

SOURCES

STEEL FRAME: Brombal and Glacier

GLASS: Cardinal Glass Industries

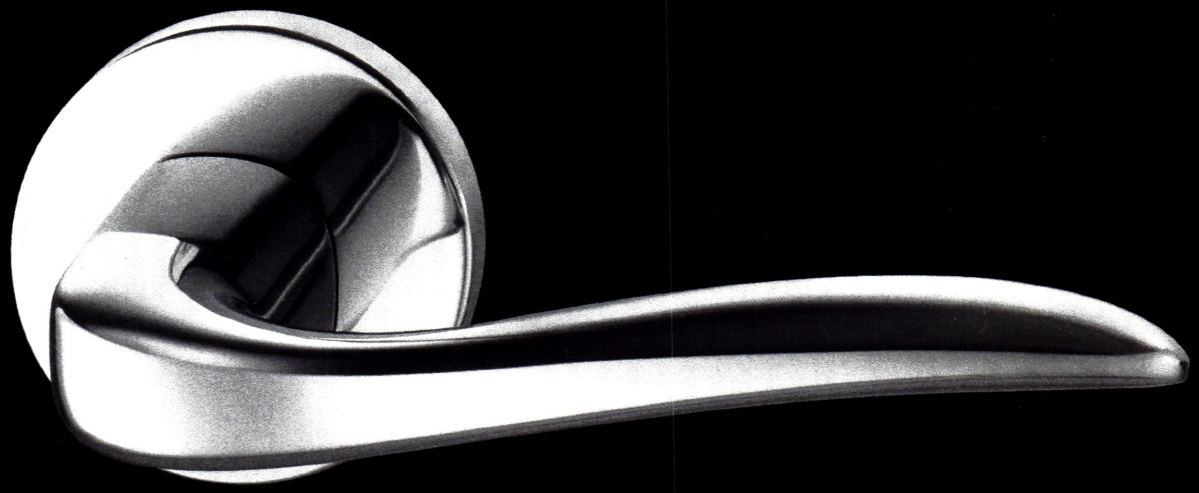
LEVERS AND PULLS: The Tom Kundig Collection by 12th Avenue Iron

PAINTS AND STAINS: Benjamin Moore; Farrow & Ball

WALL COVERINGS: Filtzfelt

SOLID SURFACING: Ann Sacks; Pental Surfaces

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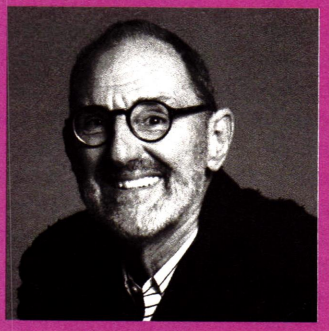
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Home Grown

In a city where locavores rule, a new office building showcases regional materials and innovative construction techniques.

By Michael Cockram

ALTHOUGH ONLY four stories tall, Albina Yard, a spec office building, stands out among its one- and two-story neighbors in the scrappy residential and commercial district in north Portland, Oregon. Looking up from the street through the horizontal bands of the glass facade, the ceilings of each level—planes of warm Douglas fir—are visible. These elements are not just finish material but the building's exposed floor plate. Designed by Portland's LEVER Architecture, Albina Yard, completed in 2016, is one of a handful of buildings in the U.S. constructed using a mass-timber structural system.

The divide between the new office building and its grittier context is bridged by the architect's use of understated formal moves and a humble material palette. The scale of the street elevation is modulated and delineated in a subtle dance of cantilevers. The second story projects straight out to form a shallow protected zone over the storefront at the ground-floor retail space. The facades of the third and fourth floors twist a few degrees off the grid in opposite directions. The effect is like a stack of books slightly askew. Dark corrugated-metal siding, which clads the side walls and other opaque parts of the building, complements the nearly complete two-story office annex (also designed by LEVER) made of shipping containers and located in the rear courtyard of the L-shaped lot.

Although timber-framed construction has been around for thousands of years, mass timber is a more contemporary spinoff. Instead of solid wood beams and columns made from large trees, mass-timber frames incorporate engineered wood products such as cross-laminated timber (CLT), laminated veneer lumber (LVL), and nail laminated timber (NLT). Such components bind together small wood elements to form strong structural units.

Above its concrete foundation, Albina Yard

STACKING THE DECKS The mass-timber elements of the four-story Albina Yard (opposite and below) serve as both structure and interior finish material. The exterior, which reads as a slightly askew pile of books, is clad in glass and corrugated metal.

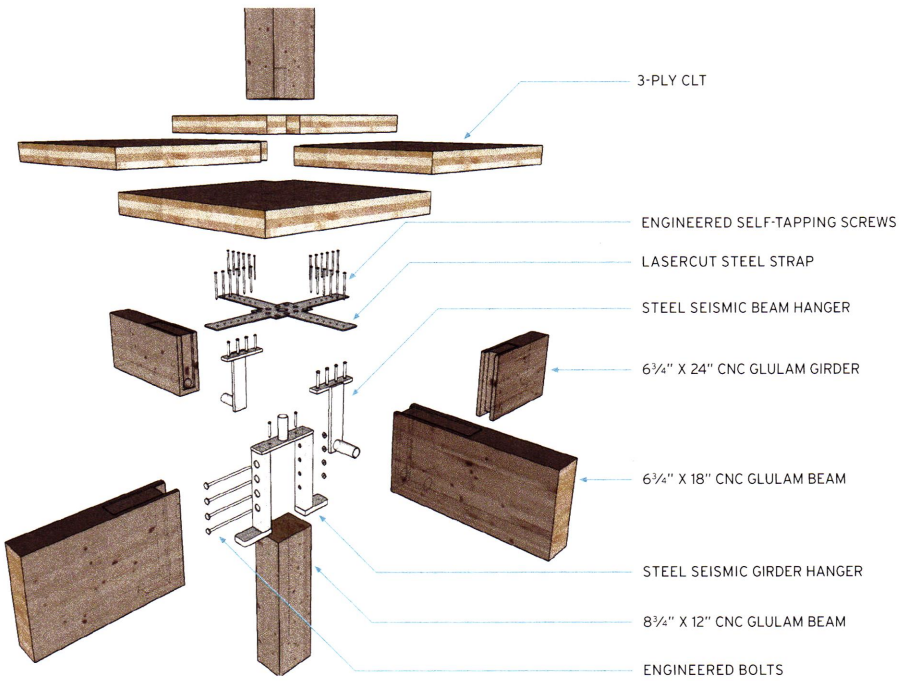


PHOTOGRAPHY: © JEREMY BITTERMANN, EXCEPT AS NOTED


4713
Wayback
WOOD LANDS
4717
TANNER GOODS
2 HOURS
30 MINUTES



DISAPPEARING ACT Specially engineered and fabricated steel brackets (left) connect the columns, beams, and floor plates. These are mostly buried within the wood components and are hardly visible on the building's interior (above).



EXPLODED AXONOMETRIC – COLUMN-BEAM ASSEMBLY

has an all-wood structure. The architects designed a grid of glue-laminated (glulam) columns and beams with CLT panels acting as floor plates. Used for floor structures, walls, and even elevator cores, CLT panels are made up of three or more layers of dimensional lumber bonded with structural adhesives. Since the layers are stacked in alternating orientations, the panels are strong and lightweight and are able to span in two directions, in a manner similar to that of a two-way concrete slab. The bonded cross-lamination makes CLTs dimensionally stable, preventing the significant shrink and swell inherent in many wood products.

The approach has been used in Europe for a couple of decades and is spreading rapidly in Canada and the U.S. This momentum has spawned an informal competition, pushing mass-timber buildings to new heights from mid-rise to high-rise construction. The current record holder is the 160-foot-tall, 14-story Treet residential building in Bergen, Norway (RECORD, September 2015, page 116).

According to Thomas Robinson, LEVER's founder, the firm decided to use this type of construction because of the client's interest in sustainable strategies and regionally sourced materials. Designing with locally grown and fabricated elements saves energy and transportation costs.

Robinson also sees projects like Albina Yard as a means to help reinvigorate Oregon's depressed timber industry. "We can connect the explosive growth in our cities to rural economic development," he says. The timber industry in the Pacific Northwest has never fully recovered from the recession in the 1980s and subsequent forestry regulations that curtailed the supply of large trees for construction.

CLT and the other engineered-wood products used in mass-timber structures rely on smaller diameter and potentially more sustainable second-growth trees, says Professor Thomas Maness, dean of the forestry depart-

DIAGRAM: LEVER ARCHITECTURE

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A Wall that Rocks

IN MANY WAYS, Albina Yard has served as a test bed for a much more ambitious LEVER Architecture project: the 12-story mixed-use Framework building in downtown Portland, Oregon. It was one of two projects that split the $3 million U.S. Tall Wood Building Prize, sponsored by the U.S. Department of Agriculture, the Softwood Lumber Board, and the Binational Softwood Lumber Council. At approximately 145 feet tall, Framework is expected to become the tallest mass-timber building in the U.S.

High-rise buildings typically rely on the shear walls that define a circulation core to stiffen the structure. In an earthquake or in high winds, the floor diaphragms transfer the lateral forces to the shear walls that resist and absorb movement. But Framework will have an innovative core system: a so-called "rocking wall" made up of vertical CLT panels.

Instead of trying to prevent the panels from moving in a seismic event, the designers have placed post-tensioned cables down the center of the wall to allow the ends of the panels to rock up and then pull the wall back into position to "self center." According to Eric McDonnell, a structural engineer with KPFF in Portland, "With most traditional systems, like a concrete shear wall, the building won't necessarily come back to level once the shaking stops." LEVER principal Thomas Robinson adds that the team performed extensive testing with Oregon and Portland state universities to develop the resilient low-damage system.

Between the shear walls and the adjacent columns, the design team used a U-shaped flexural plate (UFP) that allows differential movement and absorbs energy. If the UFPs are damaged in an earthquake, they act like seismic "fuses" that can be replaced fairly easily, potentially saving costly repairs.

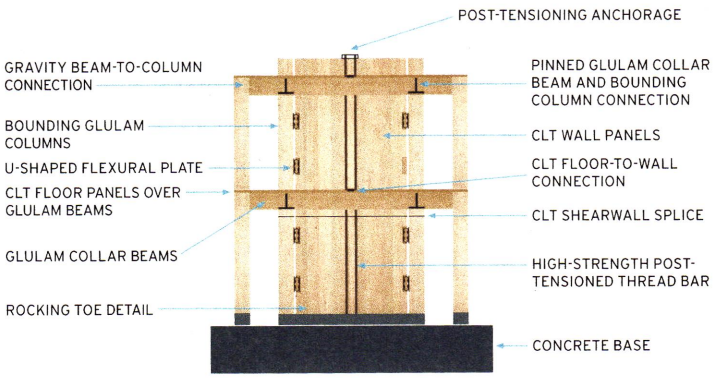
High-rise construction also has stringent fire-safety standards. Falling under the Type I-B noncombustible construction category, Framework's mass timber structural frame is required to have a two-hour fire rating. LEVER partnered with fire-prevention experts at ARUP to devise tests for the CLTs and the structure's connection brackets. The team successfully tested the world's first two-hour rated, fully loaded beam-column-floor assembly made of mass timber.

Although wood is very combustible on its surface, once a layer of char forms, it insulates and slows the burning process, according to McDonnell. Framework's components—such as beams, columns, and floor plates—have been oversized to account for the extra depth of char while maintaining enough structural integrity to achieve the two-hour rating.

The USDA grant enabled LEVER and ARUP to subject loaded, full-scale mockups to combustion tests. According to ARUP fire-safety engineer David Barber, a major challenge was designing and testing the connectors, which needed to work aesthetically and structurally while standing up to the two-hour fire-rating requirement. Similar to what they did for the Albina Yard connectors, the team designed brackets that are totally encased by the wood structure, which makes them more fire-resistant.

The project has passed its life-safety tests and is currently in the final phase of permitting. Ground breaking is slated for this fall. *M.C.*





ELEVATION – POST-TENSIONED ROCKING WALL (STATIC STATE)

TREES TO TOWER The 12-story, 145-foot-tall Framework tower (top), expected to be the tallest mass-timber building in the U.S. once complete, will have a "rocking wall" core (above) designed to self-center after a seismic event.

ment at Oregon State University. He adds that mass-timber products can generate an array of highly skilled jobs, from those on the forest floor to others in high-tech fabrication facilities.

Because Albina Yard's glulam components and CLTs were prefabricated off-site in a controlled environment and because of their inherent dimensional stability, LEVER designed the building to an unusually tight tolerance of ⅛ inch. But the team wisely decided to construct the ground-floor structure before fabricating the rest of the frame in order to work out any glitches that might arise in the system. They found that they hadn't accounted for the full depth of the fillet welds on column-to-beam connectors. "A little grinding to fit the beams was the only on-site correction we had to do," says Robinson. The CNC software that cut the slots in the glulam elements for the connectors was adjusted to account for the welds, and the rest of the structure went up without a hitch.

Not only was the building erected easily, but it also went up quickly. Each of the 4,000-square-foot CLT floor decks was installed in about four hours. With conventional methods, each level would have required up to a week, Robinson estimates. The construction method offered other benefits, including a quiet construction site and "just-in-time" material delivery, with the components arriving at the site immediately before they were

IMAGES: COURTESY LEVER ARCHITECTURE (TOP); KPFF (BOTTOM)

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KIT OF PARTS Because the floors are made up of CLT panels fabricated off-site, each of the 4,000-square-foot decks was installed in about four hours. The prefabrication offered other benefits, including a quiet construction site and just-in-time delivery.

ready to be installed. Such an approach is especially appropriate for projects in dense urban areas, where on-site storage and staging space is at a premium.

Although LEVER is currently working on a project that will rely on CLT for its structural core in addition to its superstructure (see sidebar, page 124), Albina Yard has a more conventional wood-frame core sheathed in plywood with hold-downs at each level. The core, along with the specially fabricated column-to-beam connectors, helps the building comply with seismic requirements. Fabricated in a local shop, the steel components are screwed to the columns but support the beams only with friction connections. They are embedded in the beam-ends with a saddle for the primary structure and a pin connection for the joist beams. The result is a seamless grid of glulam beams supported by hefty, square glulam columns—without a fastener in sight.

Mass timber is substantially lighter than concrete or steel-frame construction. In addition to smaller gravity loads, a lighter structure can reduce lateral loads, which in turn further decreases the demands on the foundation, according to Eric McDonnell, a structural engineer for the project with KPFF in Portland. He adds that, while smaller loads can allow smaller foundations, in some cases they can also preclude the need for expensive piles or even allow for a taller structure. For Albina Yard, the foundation loads are between 40 percent to 60 percent less than if the superstructure had been steel or concrete, estimates McDonnell.

Mass timber has several ecological advantages over typical construction methods. The earth's forests make up an enormous carbon sink that absorbs about 30 percent of global carbon dioxide emissions. When dry, one half of wood's weight is made up of carbon, which it retains until it is burned or decomposes. According to European studies, one cubic meter of structural lumber can store about one metric ton of CO_2. Also, mass timber is comprised of large-scale components that can be more easily disassembled and reused than those of many concrete and steel structures. Even standard stick framing, because of multiple fasteners and adhesives, is difficult to deconstruct intact.

When compared to a concrete structure, mass timber scores better across the board in terms of its impact on the environment. A 2012 study by the University of British Columbia's Sustainable Building Science Program found that producing mass-timber structures generates less air pollution, less toxic waste, requires less water, and embodies 18 percent less energy from nonrenewable sources than a concrete building. Overall, concrete has two-and-a-half times the potential impact for global warming than mass timber, the study asserts.

Despite these sustainable attributes and the aesthetic warmth of mass-timber construction, Robinson hadn't planned to build out the top floor for his firm. However, during construction, when several members of LEVER stood on the third-floor deck, they were surprised to see an unobstructed view of Mount Hood and decided it was an opportunity they couldn't pass up. "This is an architectural practice," Robinson says with a chuckle, "and it's good to practice on your own space before designing for other people." ■

Michael Cockram is a freelance writer and director of Bowerbird Design in Fayetteville, Arkansas.

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Learning Objectives

1 Define the term "mass timber" and explain what distinguishes it from other types of wood construction.

2 Describe the fire-resistive and structural properties of mass timber.

3 Outline the environmental attributes of mass-timber construction.

4 Describe the lateral load-resisting system planned for Portland, Oregon's Framework building.

AIA/CES Course #K1706A

PHOTOGRAPHY: COURTESY LEVER ARCHITECTURE

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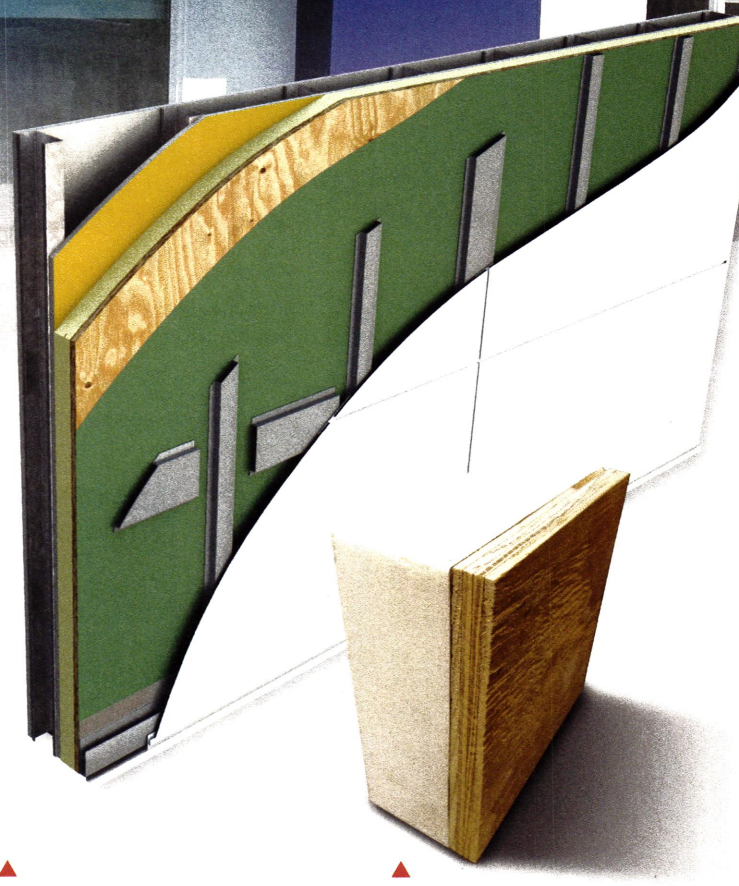
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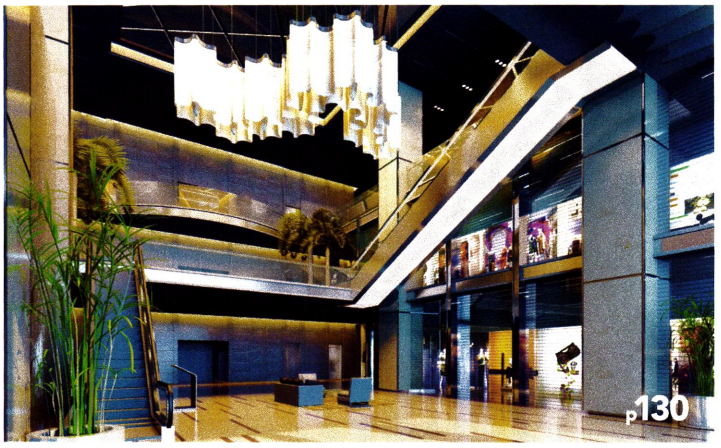
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Image courtesy of TAMLYN



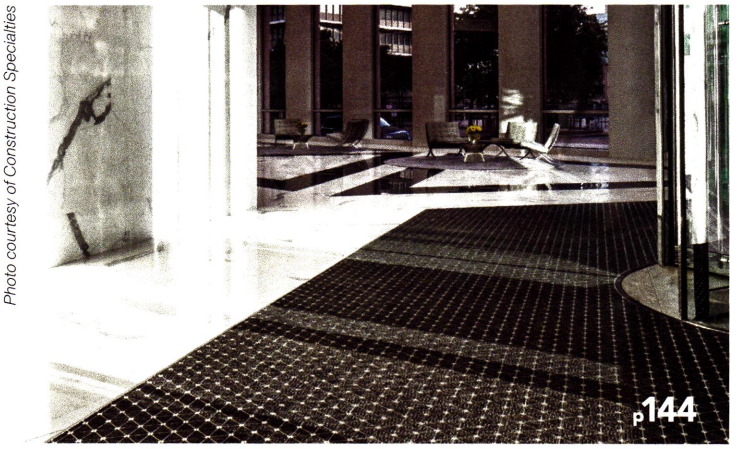
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Interior spaces in buildings are influenced by trends, materials, products, user preferences, and designer creativity—all of which promote innovation for interior design.

Image courtesy of TAMLYN

Innovative Interiors

Research, creativity, and functionality intersect to meet the needs of the client and building occupants

Sponsored by ARCHITECTURAL GRILLE, Construction Specialties, Doug Mockett & Company, Infinity Drain, Inpro, NanaWall Systems, and XtremeInterior Architectural Solutions | *By Peter J. Arsenault, FAIA, NCARB, LEED AP*

Most people would agree that the first impression of a building comes from the exterior, but usually it's the interior that generates a lasting impression. The interior is typically where clients and building occupants spend their time, interact with others, and carry out the activities of living, working, or playing. It's no wonder then that this is where the design community finds a lot of opportunity to be creative, innovative, and unique. Fueling innovation is research being conducted on everything from human impacts of openness and natural light to perceptions about color and texture. Functional concerns also come into play, centered on the ability of a space to accommodate the needs of the people occupying it and the long-term ability of it to perform as intended. All of these aspects of creativity, functionality, and human needs intersect during the process of designing building interiors. Recognizing this, manufacturers of interior building products have been equally creative and responsive to the needs of designers by continuing to offer new and updated products, materials, and systems. Sometimes these are totally new products, while other times they are known and proven, just used in different and creative ways. In this course, we will delve into some of the products that are contributing to the latest interior design trends and helping design professionals move things forward.

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1 AIA LU/HSW

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Learning Objectives

After reading this article, you should be able to:

1. Identify the ways that innovation in interior design products and systems can impact aesthetics and the overall design of a space.
2. Assess the functional performance aspects of walls, doors, and other surfaces as they relate to durability and sustainability.
3. Explain the importance of proper substrate preparation and installation techniques to enhance functionality and longevity.
4. Determine ways to incorporate principles presented into buildings as shown in the project example case studies.

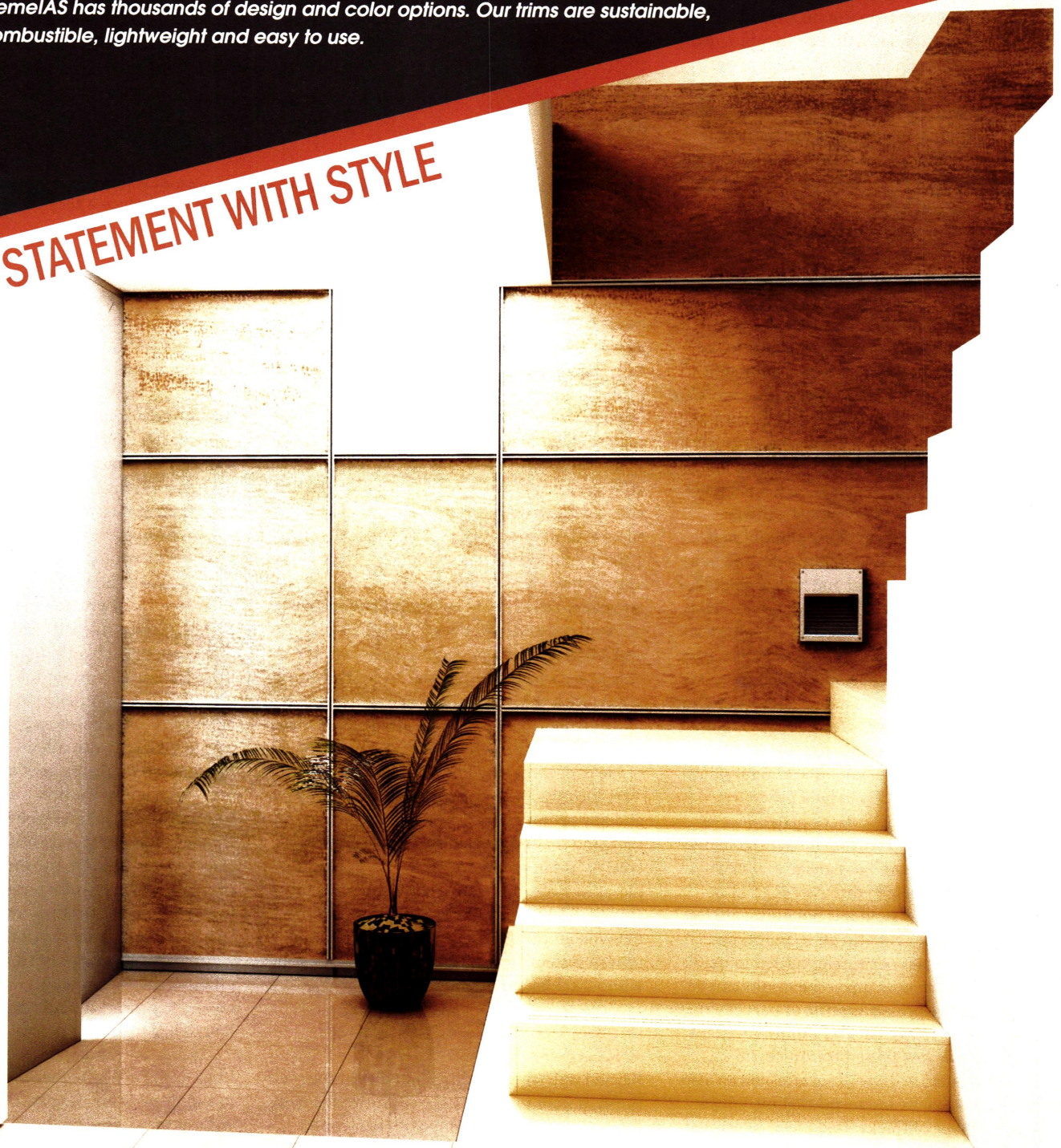
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CIRCLE 302

INNOVATIVE WALL SURFACING

Among the first surfaces that people experience in an interior space are the walls. They can be as simple and understated as white painted gypsum board or as elaborate and detailed as a designer's imagination allows. All the while, they need to be easy to maintain and clean over the life of the building. With this in mind, many interior designs lean toward a simpler, more elegant wall surface solution with a clean, modern look and minimalistic details. Others select certain walls to feature with added detailing and trim to create a total appearance. Achieving any of these looks typically involves panels of some sort, such as gypsum board or other rigid materials with reveals or trim around the edges. That trim can be metal, wood, or other suitable choices to frame and accentuate a wall surface while protecting and aligning the panels.

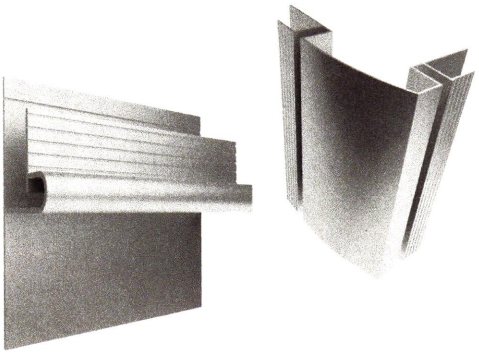
One increasingly popular method of dealing with finish panels on wall surfaces is to use manufactured trim pieces made of aluminum. Products are readily available that are designed to be used with $^{5}/_{8}$-inch-thick drywall or in conjunction with wrapped surface finishes, such as fabric or vinyl wall coverings. They are available in a variety of traditional, contemporary, and modern looks to create subdued or emphatic three-dimensional appearances. Since aluminum is highly durable, recyclable, lightweight, and noncombustible, it is a popular and logical choice for many building products, including interior trim of this type. Its strength helps provide some wall protection when used for corners and other areas that need some reinforcement. In that sense, it is a good example of a well-known material that can be used in innovative ways for interior designs.

In addition to standard products, custom profiles can be made to not only accommodate particular styles but also to hold other materials, such as glass, tile, or panels in a variety of thicknesses. Some manufacturers offer customized service and designs to architects and will readily meet to discuss design ideas and solutions. This service is not only centered on aesthetic issues but also on technical and performance issues of the trim related to its ability to hold up over time. The results can be profiles that are project specific or part of a mass production selection, such as aluminum extrusions of simple reveals and transitions to improve and enhance drywall surfaces. It can also include new shapes and forms that introduce the appearance of fine crafted metal integrated with drywall and panelized surfaces. Part of the beauty of aluminum extrusions is that they are very economical, meaning that they can more easily be incorporated into projects.

The unique design possibilities of this trim approach can create clean lines, shadow lines, or reveals that make a wall surface stand out as part of an interior space. It is also readily possible to create rounded corners, smooth transitions, or other shapes that enhance the overall design of the space in ways that wouldn't be possible with traditional wall surfacing techniques. Economical aluminum trims are available in a primed finish for painting in the field or prefinished in common anodized aluminum colors, such as clear, champagne, bronze, and black. Wayne Braun, an interior designer with the firm PDR in Houston, has worked with manufacturers on designs of this type and created some very successful interiors in the process. He notes, "The manufacturer has introduced the appearance of fine metal craft integrated with drywall and panelized surfaces at a fraction of the cost of having custom metalwork designed, detailed, and fabricated for a project." Needless to say, it is easy to see why his firm is able to continue to innovate with this wall surface and trim approach.

Designers like Braun have also found that to be fully successful, a design needs to address all of the conditions and details of wall surfaces. That includes the wall base, corners, top edge, and any openings or variations. In that regard, they find that working with a single manufacturer who can provide all of the needed trim pieces in a coordinated system is a big key to success. Maybe just as importantly, being able to work out the details using a consistent and proven system means that innovation is possible without taking on undue design risk.

Images courtesy of TAMLYN





Aluminum trim systems can create simple but stunning profiles for innovative wall surfaces. As shown here, they can provide base or corner protection or produce a simplified installation for vertical or horizontal drywall designs.

DESIGN TREATMENTS FOR WALLS AND ELEVATOR CABS

Beyond wall panels of different types, the surface finish of walls is always a significant design item. Interior wall protection is a given in facilities with high traffic and the risk of wall damage, but a balance between appearance and durability needs to be struck to create surface conditions that are both appealing and easy to maintain. In that regard, manufacturers have come a long way by developing rigid, protective sheet products in vibrant solid colors, various patterned products, and realistic woodgrains.

There is also often the need or desire to include graphics in the form of photos, logos, information, teaching, or wayfinding on the surface of walls. Protecting such graphics as well as the wall can be a challenge in high-use areas, but there is an innovative solution for that now that is worth considering. The use of digitally printed wall panels has emerged as a truly viable wall surface option for many buildings. Printing the image on the back side of a durable, clear rigid sheet means that the image is protected by the clear covering. If the exposed surface becomes dirty or is bumped, the plastic takes the hit, not the graphic image.

Printed wall protection transforms what designers most likely consider a necessary evil into beautiful artwork. Because printed wall protection is all custom made, designers have total design flexibility to incorporate any and all images they choose as part of the overall design vision. It also allows for the incorporation of large-scale imagery or smaller graphics—from entire walls in a school gymnasium, to an atrium in a hotel lobby, to smaller art elements for a corporate board or conference room. In health care, the inclusion of biophilic imagery, which mimics nature, has been shown to play a role in patient comfort and calming. In education, school mascots become wall-size giants to build school spirit and pride. In hospitality spaces, the imagery can be tied to the locale such as local landmarks or attuned to the hotel's brand and/or décor.

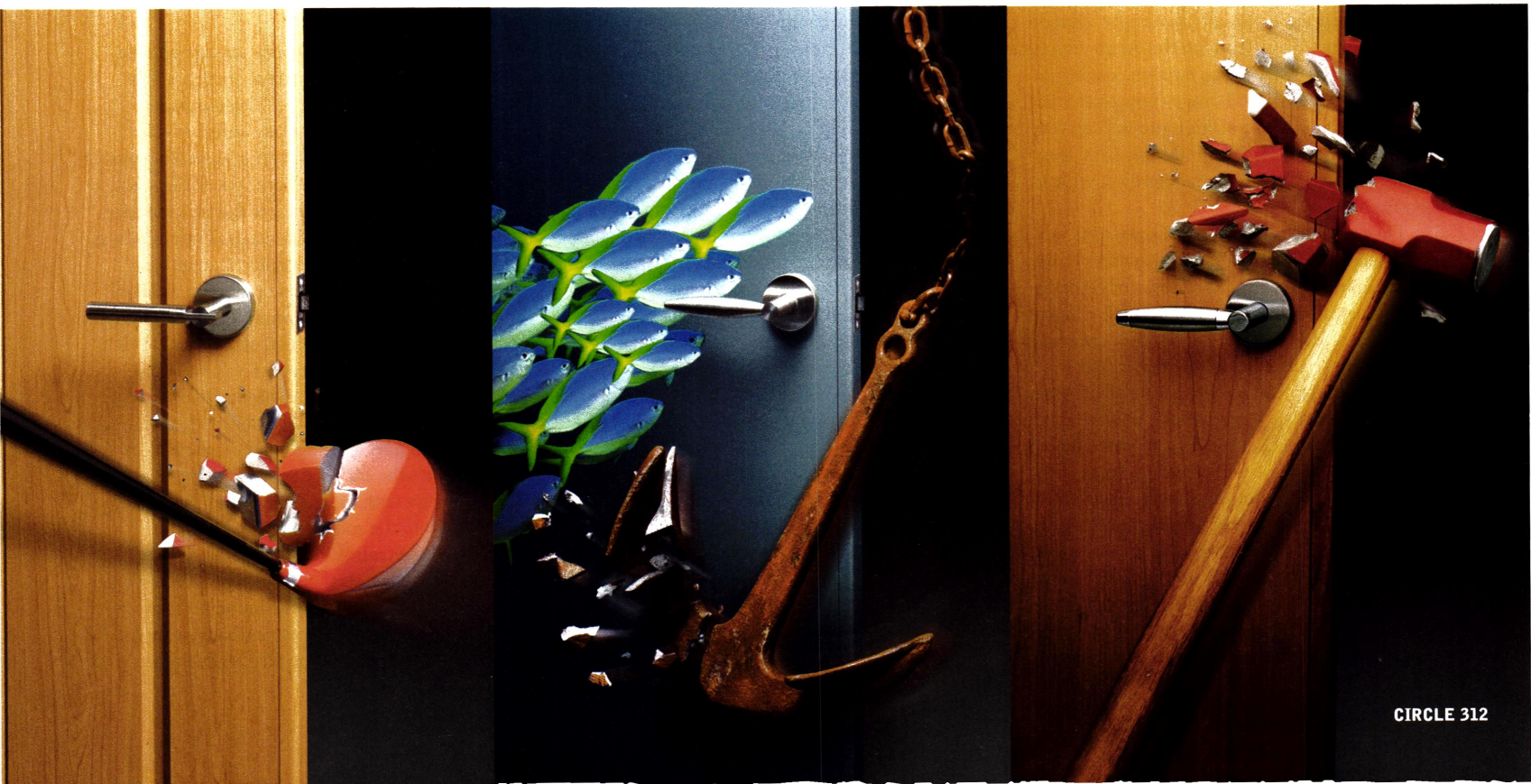
Such graphic imagery doesn't need to be confined just to walls. Among the most used spaces in a multistory building are the elevator cabs. The walls of these cabs have been discovered by many building owners as a means to communicate with visitors, tenants, and others about some aspect of the building use. In essence, the elevator cab can become a daily ambassador of the message or branding of the building. However, these cabs are subject to deterioration and damage precisely because of their heavy use. This damage gives the impression that the owner does not care



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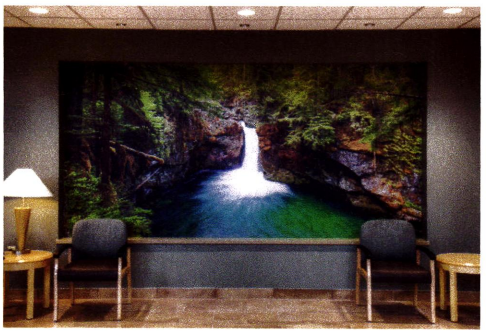
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CIRCLE 312

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A $20-million expansion more than doubled the size of the Cancer Center at All Saints Hospital in Racine, Wisconsin. Eppstein Uhen Architects incorporated large-scale digital wall cladding into three lounges/waiting areas of the new facility, which featured tranquil nature scenes.





A $3.5-million renovation project to modernize multiple elevators across the campus of the University of North Carolina – Charlotte included multiple woodland patterns with custom graphic logos applied in selected locations plus new ceilings, lighting, and stainless steel handrails.

about upkeep of the building, which in turn may create a negative perception about the entire organization. Maintaining the brand image of a facility is usually quite important for people trying to retain clients and give visitors a pleasant experience. Therefore, the elevator cabs need to be updated regularly either to overcome a worn and unsightly appearance or to simply upgrade the look to be consistent with the organization or other parts of the building. Further, leaving an old, damaged, dark, and dingy elevator cab out of a larger building renovation project can very well make the appearance look worse and leave an otherwise beautiful upgrade project with a serious black eye.

The most cost-effective and innovative way to carry out such an elevator cab upgrade is to use preconfigured elevator cab renovation systems from a manufacturer that has a specialty line of products to address these needs. This system can include any or all of the following elements.

- **New panels:** The elevator panels that line the walls are what primarily make up the appearance of the cab. These panels also typically take quite a beating—from hospital beds to luggage carts, tenant move ins and outs, construction equipment, vandalism and whatever else may come its way. Fortunately, the panels can be made of durable and rugged materials that can be made to look like any range of materials from wood to metal to stone or custom choices. Sometimes materials are improperly selected because of first appearances or first costs. The downside to that is that the chosen material may look fine for the first month or so but then deteriorates quickly from heavy use. That means the building owner needs to spend more money to replace it with a more-durable product that should have been installed in the first place.
- **New ceilings and lighting:** Elevator ceilings come in many different styles and can be selected to suit an overall design concept. Lighting in elevator cabs can be chosen from among common lamping options, such as halogen, incandescent, fluorescent, or energy efficient LED. Keep in mind that people tend to be more comfortable in a well-lit interior, so combining a brighter ceiling with increased lighting output can help people feel more relaxed inside, not to mention create a newer and cleaner look. The energy efficiency of increased elevator cab lighting may not seem significant at first, but consider that, in most cases, these lights stay lit 24 hours a day seven days a week meaning they are running for 8,760 hours a year. That can add up to a lot of energy and the utility bills that go along with it. Further, selecting energy-efficient LED lighting means the lamps have a much longer service life, notably reducing maintenance costs for replacements.
- **New handrails:** Handrails in elevators may not get much attention unless ADA or accessibility code requirements are being looked at. The handrails provide stability for users (i.e., something to grasp) while the elevator stops and starts. This is particularly true for elderly, disabled, or injured people who need help to reduce the risk of a fall. Beyond the people aspect of handrails, they provide a means for a complete look to the cab and can act as a wall guard too. By providing a stand-off surface from the wall of the cab, they can reduce the chance of equipment or furniture striking the wall panels. As part of a total system for elevator cabs, handrails come in different shapes, sizes, and finishes.

Paying attention to both the appearance and durability of wall surfaces and elevator cabs can clearly pay off in terms of creating successful, innovative interiors.

OPERABLE GLASS INTERIOR WALLS

While many people think of walls as stationary to isolate spaces from one another, there are plenty of occasions when having the ability to open up and connect two spaces is desirable. This is particularly true in a number of commercial, office, retail, hospitality, restaurant, and educational settings where different sized groups of people can create different space needs. At the same time, having visual access for either light or functional connectivity when walls are closed can be desirable or necessary in certain design situations. As such, the approach of creating open use of spaces with flexible square footage has become increasingly popular and is a true innovation in interior design and planning. The means to do this found in operable glass interior walls that can fold or slide into either open or closed positions at will.

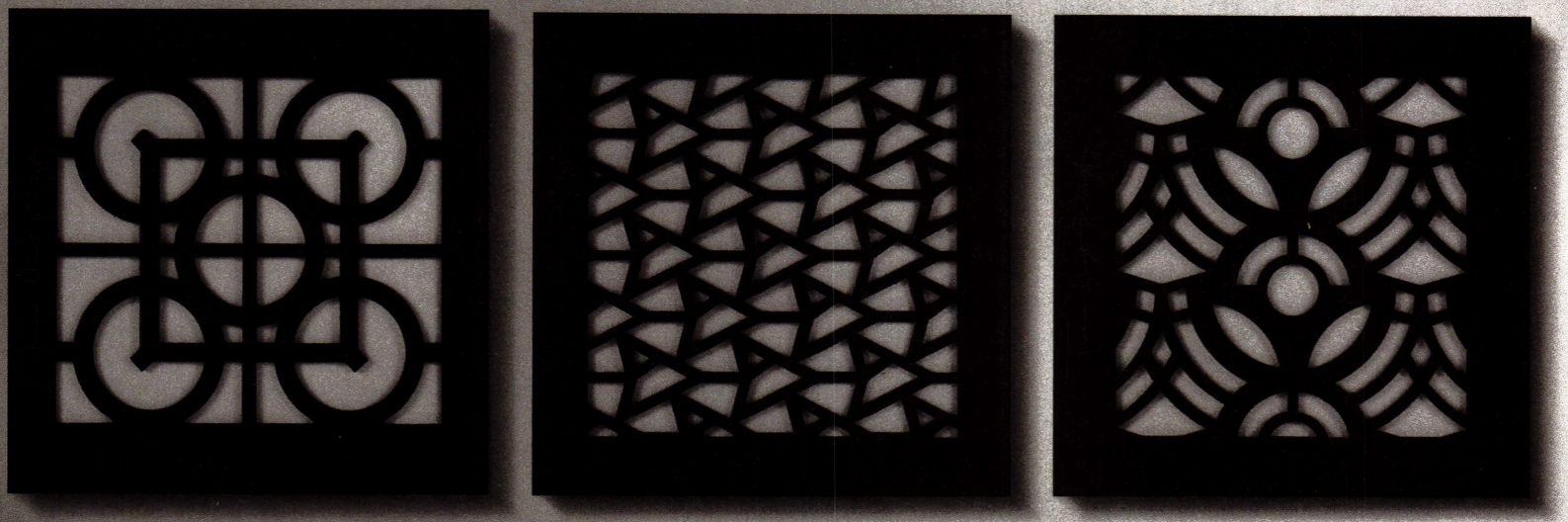
When looking at incorporating an operable glass interior wall into a project, there are four prime design considerations. These include:

- **Flexibility:** Operable glass walls provide ultimate flexibility for either separating spaces or combining two or more spaces. Selecting a product that is truly easy to use is important so that it will actually be used as intended and not become a liability rather than an asset.
- **Light:** When the operable wall is open, all of the available light can pour into the space that would otherwise be closed off by a wall. When the operable wall is closed, it can either be opaque or translucent to block some or all of the light if desired, or it can be made with clear glass and minimal edge frames to still allow full light into the enclosed space. The use of glass also helps with providing natural daylight and views into the enclosed space.
- **Sound control:** When an operable wall is closed, it suggests that the people inside of the space need or desire some sound separation from the adjacent spaces. Sound transfer can be tested and measured on all operable glass doors

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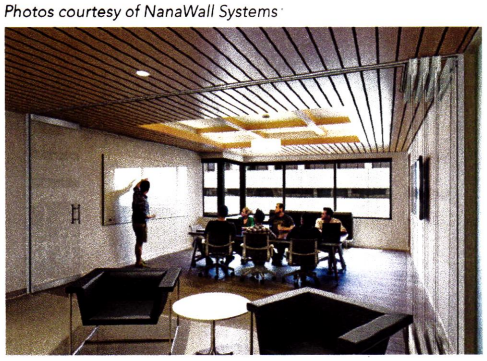
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CIRCLE 22

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Operable glass walls provide the flexibility of opening spaces up to each other (as shown on the left) or separating spaces (as shown on the right) to create privacy and sound isolation without sacrificing light and visual connectivity.

to determine sound transmission class (STC) ratings and outdoor/indoor transmission class (OITC) ratings. Independent tests conducted on operable glass walls have shown results of an STC of 36 and OITC of 30, which are favorable for many indoor environments and better than some fixed glass partitions.

- **Privacy:** Focused meetings or private conversation often need the privacy of good sound control and sometimes visual control. Operable glass walls can be specified to achieve such desired levels and maintain the needed privacy when the doors are closed.

Overall, with no floor track required, operable glass walls allow for uninterrupted transitions between interior spaces. When the wall is closed, the beauty of an all glass aesthetic is realized with the added benefits of acoustical sound privacy and the potential for views and shared light.

ORNAMENTAL METALWORK

A somewhat common but well-established interior product is found in ornamental metals. Sometimes thought of for high-end HVAC grille covers for air vents and supply or return registers, it is also being used innovatively for aesthetically exciting solutions to some interior design challenges. For example, perforated or artistically fabricated grilles can be used for nonstructural infill panels for featured locations, such as staircase risers and railings, door panel inserts, bedroom headboards, lighting, room dividers, decorative screens, and artistic accents. Modern manufacturing and fabrication techniques mean that there is very little that can't be created from architectural and ornamental metalwork. Used creatively, it can transform a commercial or residential project from ordinary to extraordinary by adding an element of luxury and sophistication.

With these attributes in mind, it is easy to see why innovative interiors can include at least one element of metal as part of an overall design. Whether used to complement existing materials or as a contrasting design feature, custom metalwork provides an architectural design accent with great durability for functionality. Further, since most metals are easily and readily recycled, they are a good fit for green buildings and sustainable design programs.

Architectural and ornamental metalwork is available in a variety of base materials, such as brass, bronze, aluminum, and stainless steel. The metal can be finished in a variety of appearances from traditional looks for historic reproductions in building restorations or with modern, sleek finishes that fit into more contemporary buildings. Beyond standard offerings, manufacturers and fabricators are able to readily create custom metal products that give architects and designers more design options to present to clients and build into an overall design scheme. Because there are so many choices available, the final design can be developed to fit within defined price points, thus keeping within budget while adding a high-end design feature.

Kenneth Nilson, a custom metalwork artist in Brooklyn, New York, comments about working with a national ornamental metal company by noting, "They will work with just about any metal and have a sense of adventure to try new things with great respect for design professionals. They roll and bend and weld just about anything that is beyond my capabilities, such as custom counter tops, large cylinders (for end tables), and their signature grilles, which I adapt for fire pits and fireplaces. My company and my work have grown due in a large part to the support from this company." Stephen Giumenta is co-owner and design engineer at Architectural Grille, a custom fabrication company located in Brooklyn. He responds by pointing out, "Innovation does not exclusively reference new technology—architects and designers are now being innovative by using custom pieces in ways outside of so-called 'accepted' design parameters. Spaces change when looking through perforated grilles, which are essentially patterns cut into a solid piece of metal. We enjoy creating unique ornamental metalwork by helping the designer tell their story through scale and thickness, resulting in a functional piece of art."

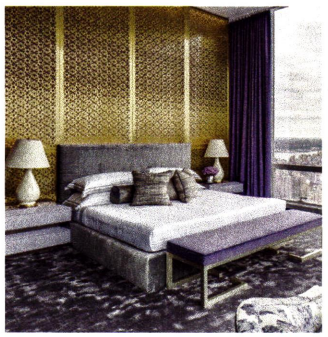
INTERIOR DOORS AND FRAMES

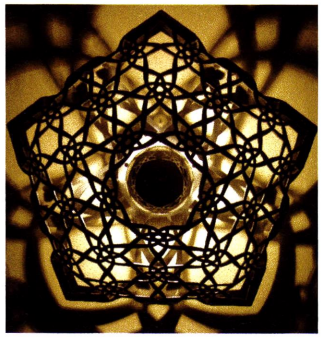
Any interior design scheme needs to take into account interior doors and frames. As a significant design element, they not only need to be worked into the overall circulation plan of the building, but they also need to function reliably, hold up over time, and look good doing it. The doors and frames are arguably one of the most used parts of building construction, with a regular flow of people, equipment, furniture, carts, or other things touching and passing through them, usually daily. If they are treated simply as a commodity without proper attention, they can potentially become a worn eyesore in an otherwise beautiful facility. Paying attention to the details of the doors and frames helps to ensure that entire interior openings can both become a notable design feature and a functional part of the building that keeps working and looking good over time.

Selecting impact resistant interior doors that withstand wear and impact in high-traffic interiors starts by understanding some of the differences in the way doors are constructed. Most have a solid core of a variety of durable materials. Part of the difference comes from what that core is covered in, usually as a lamination over the core. The more durable and wear resistant that the covering is, the more wear resistant the door will appear. Another difference is the door edge. A common manufacturing approach is to simply band the

From left: Photos courtesy of ARCHITECTURAL GRILLE; Marco Ricco; Kenneth Nilson







Ornamental metal is being used in innovative interiors to create sophisticated touches by creatively incorporating it into such things as stair risers, bedroom headboard walls, and even custom lighting fixtures.

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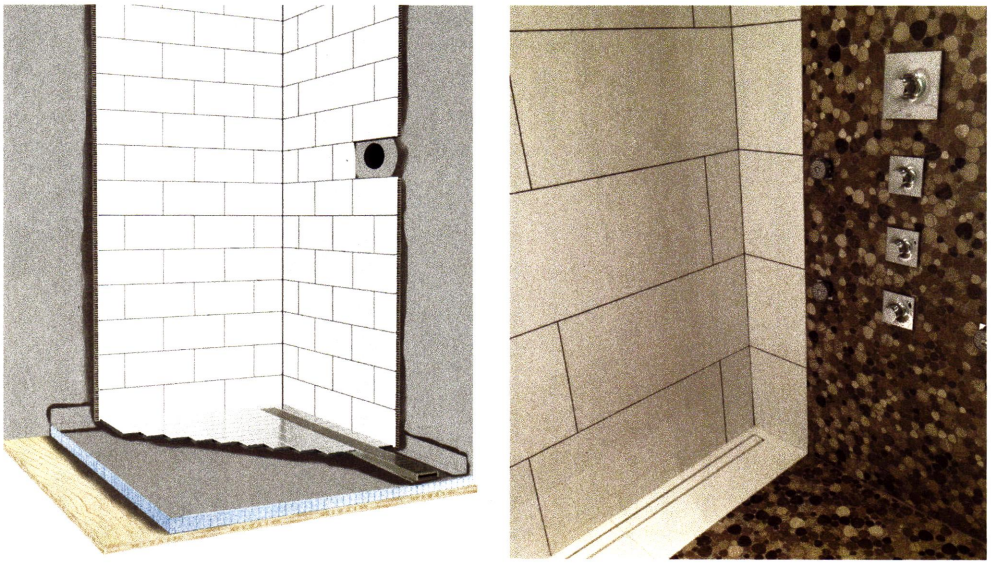
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edge of the door with the same material as the faces. That seems logical but doesn't acknowledge the fact that the edges are the most likely place for wear and damage to occur. At least one manufacturer has addressed this by creating field replaceable rounded edges and stiles for extra impact protection. This not only helps to strengthen the door, but it also makes for quick and easy edge replacement in the event that the level of damage warrants it. This obviously costs less than replacing the entire door with no downtime or disruption to the facility, helping the doors continue to look as good as the day they were installed.

Door frames are the other piece of interior doors that need to be addressed. Commonly, hollow metal frames are used to secure the door to surrounding walls and provide a visual surround for the opening. The frames are subject to wear and damage as well of course, so being sure they are installed and anchored correctly is important, but so is the way they are finished. With some manufacturers, it is possible to specify the same type of rugged lamination over door frames as is used on the doors. This not only assures good durability, but it also allows the design of the entire opening to be coordinated in terms of colors and finished appearance. The covering material can also be selected as a field-replaceable item if it is ever damaged.

From an aesthetics standpoint, both doors and frames products are available in laminations that include numerous designer colors and woodgrain patterns to suit a wide range of interior design schemes. For extra design and customization, it is also possible to have custom graphics included on the doors. This feature allows photography, branding, wayfinding, customer patterns, illustrations, etc. to be included on the doors without sacrificing durability at interior openings.

Images courtesy of Infinity Drain Ltd.



The design of shower areas in residential or commercial settings is streamlined by the use of complete shower systems that include waterproofed pitched floor substrates and tile backerboard as well as the decorative shower drain. The shower can be finished with tile or other materials, and the drain cover can be incorporated into the design as seen in the linear drain near the wall shown here.

SPECIALTY SHOWER DESIGN

While many interior innovations can take place in the larger components of a design, they can also be found in specific specialty areas of a building too. One of the areas that necessarily receives a lot of design attention is bathrooms and specifically shower areas. Many creative designers are working shower spaces into a larger overall design scheme not only in residential or hospitality locations but also in workplace environments for people who ride bicycles to work or otherwise engage in physical activity. The proclivity toward high design and the need for functionality, durability, and accessibility has created a trend toward wall and floor surfaces to visually flow between shower stalls and the surrounding room, often through the use of ceramic tile or similar materials. Of course, shower floors need to allow the proper flow of water too, so combining that function with the visual goals is paramount.

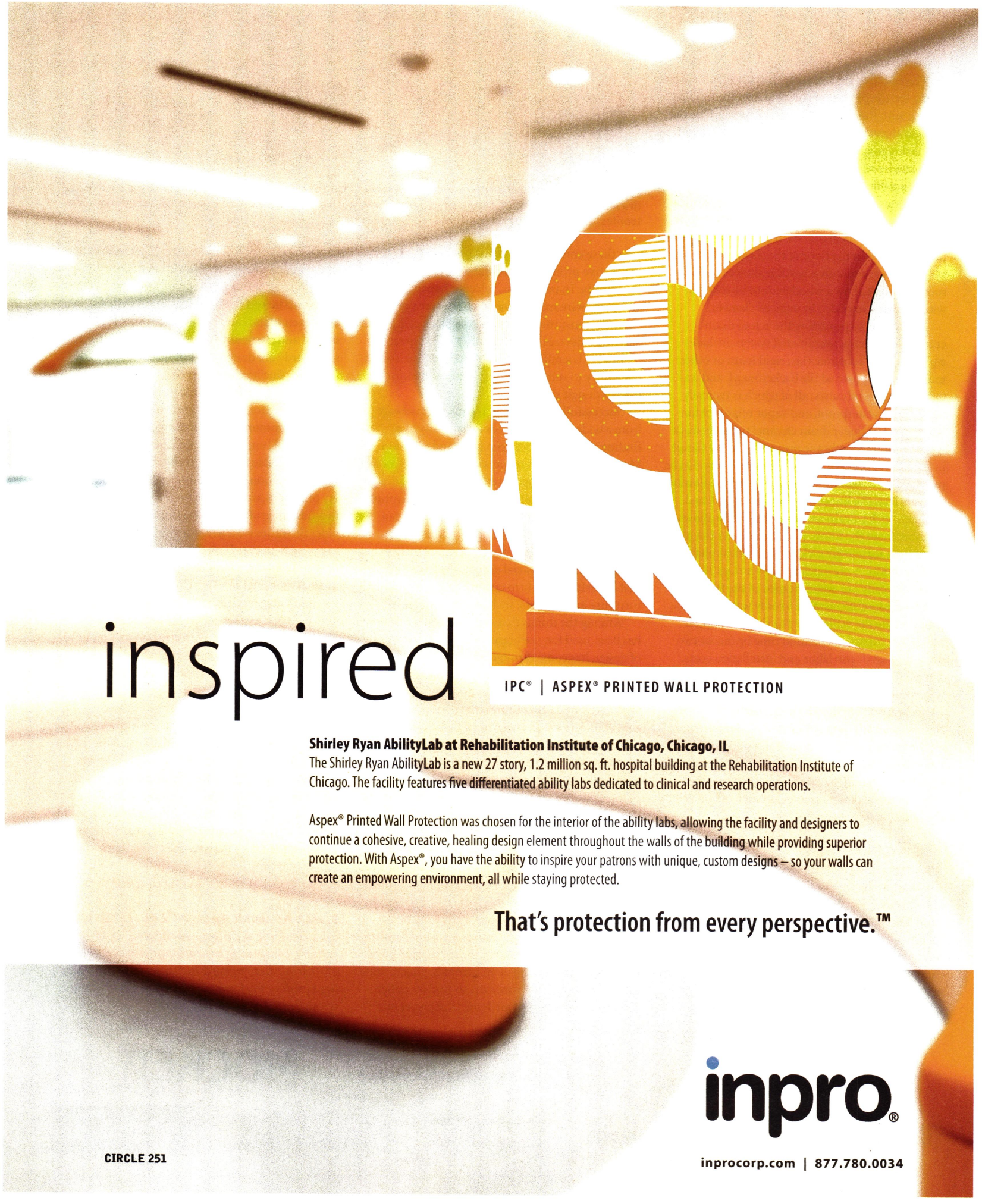
The means to provide a successful specialty shower design starts with everything that is underneath the tile. The floor obviously needs to be waterproof and sloped either to the center, one side, or in a custom configuration to direct water to a drain. That drain can be shaped, sized, and covered in a variety of ways that impact the appearance as well as the function, such as a square, round, linear, or custom shape. The waterproofing needs to be consistent around the drain as well as along the edges where the floor and the wall meet. All of these things need to be properly worked out, detailed, and installed before the tile is installed to create the finished appearance.

Some manufacturers have created specialty systems for shower floors that address all of the needed functional requirements, thus allowing designers to take advantage of this expertise by specifying a fully coordinated and functional system. Some have paired with specialty drain companies to provide a full range of drain types and looks, including some that are very sleek, contemporary, and easy to blend into a larger design scheme. This single-source capability means designers, contractors, and owners don't need to worry about proper integration of different manufactured products and systems, or about who is responsible for the waterproofing if an issue does arise. It also relieves designers and contractors from coordinating and sourcing all of the components so they can focus on other things.

Images courtesy of Construction Specialties/Dean J. Birinyi, ASMP



Interior doors and frames can be selected as part of an overall interior design scheme for aesthetic appeal and for durability to hold up over time with heavy usage as shown here in Hotel Nikko, located in the heart of San Francisco's Union Square.



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The actual drain is usually the part that is visible due to the use of a metal covering over the top that is flush with the surrounding floor finish. This can be an understated item or a visual feature depending on the design needs of the shower area. The drain cover can be selected in a variety of metal finishes and colors but also in a number of patterns of perforations. Some can provide very demure linear patterns, while others can be more geometric with different design vocabularies. If the drain is appropriately placed in the floor of the shower, it becomes very easy to provide an accessible shower stall or room that will allow a wheelchair to be rolled in without being impeded by a raised element.

In addition to providing the actual drain component, such a coordinated system includes a pitched floor substrate (i.e., rigid foam or other material), an approved tile backerboard, and waterproofing membranes, all of which is typically lightweight, waterproof, and vapor retardant for wet areas. The linear drain channel typically has a waterproofing membrane preapplied to the flange in the factory and is internally sloped. It can also be provided with a drain support to allow the plumber to easily level the linear drain despite its pitched channel. Such a drain and support system allows a plumber to set the drain, level it, and have the next tradesmen seamlessly pick up on the next phase of installation. A pre-pitched shower floor system is also typically pre-waterproofed in the factory, which requires the installer to only waterproof the seams where the walls meet the floors. This can reduce the overall installation time by one or two days, thus saving on labor and installation costs. The use of carefully selected wall boards, floors, and waterproofing membrane in the system allows for tile to be installed directly on the surface, without the use of an additional mortar bed. Because such a coordinated system is predictable and minimizes risk of leakage, it is available with a limited warranty of up to 10 years. That can provide peace of mind not only to the designers and contractors but also to the building owners or tenants.

SPECIALTY HARDWARE

With everything else in place in a successful interior design, the final step is the finishing touches and details. This applies in particular to architectural hardware not only used on walls or doors but specifically integrated into furniture and fixtures in a space. This can be true for some conventional things like drawer pulls, cabinet handles, and wall hooks that are used throughout many building types. Some specialty hardware companies provide these conventional items but also some very innovative products that offer convenience and operability. In particular, selected hardware that addresses wire management and power supply for portable consumer electronics, such as cell phones and other devices, can not only make a space more user friendly and functional, but it also has the ability to integrate this functionality into an overall design scheme.

Images courtesy of Doug Mockett & Company



Specialty architectural hardware can be used in interior designs for conventional reasons like drawer pulls or for a full range of innovative ways to manage wire and power for consumer electronics, appliances, or computers.

Successfully selecting architectural hardware from a wide range of choices usually involves finding the balance between form and function. Manufacturers focus on providing solutions for a specific need while being sensitive to overall design aesthetics and the ability to complement furniture pieces. They also recognize that hardware is not limited literally to nuts and bolts. Rather, architectural hardware is created through intensive, solution-based industrial design. They have applied that expertise directly to current design issues in furniture and fixtures, such as ergonomics.

Among the things that architectural hardware has been used for, the biggest impact on the world of design has come through effective wire management and power supply. With the growing plethora of handheld devices, laptops, computers, small appliances, and other things that need power or data connections, the need to run wires from these devices to outlets has similarly grown. The trend has been not to rely on wall outlets alone but rather to incorporate such outlets within a manufactured piece of hardware that can be installed in furniture or fixtures and then powered back to a wall. This simple concept has evolved over the years, with these types of power and communication systems revolutionizing convenient power access in all areas of design. For example, there are power grommets and other products available that can be recessed, hideaway, flip up, edge mount, and many other styles that mount directly into any type of furniture. These units provide power at the surface level where it is needed, preventing people from having to crawl under a desk or other furniture to find an outlet. This approach has provided practical power and data solutions for things like conference tables, work desks, library study carrels, and even community charging stations in public or commercial buildings. It has also helped with other facets of daily life, such as kitchen islands and bedroom furniture in residential and hospitality settings. The ability to create sleek hardware designs that fit into any furniture and add value has been part of the reason for the growth of this type of architectural hardware.

Architectural hardware provides simple solutions to common design challenges to provide meaningful functionality. Products are available that are suitable for office, residential, hospitality, retail, education, and health-care buildings. A variety of designs are available to blend with furniture in a full range of quality and finishes. Retrofitting older furniture with new hardware is also a fast and easy way to update both the functionality and look of that furniture. Manufacturers typically take pride in what they offer. As Tyra Cunningham, customer service manager of Doug Mockett and Company, puts it, "We strive for simplicity in design and a spareness in execution. We are proud to offer innovative furniture components, but above all else, we pride ourselves on our customer service."

CONCLUSION

Interior design is always ripe for innovation. As the variety of topics covered in this course demonstrate, that innovation can come from many different sources and apply to many different parts of a design, both large and small. Architects and designers who stay aware of the many different products and options available can use them in creative ways to enhance their own designs and propel their careers.

Continues at ce.architecturalrecord.com

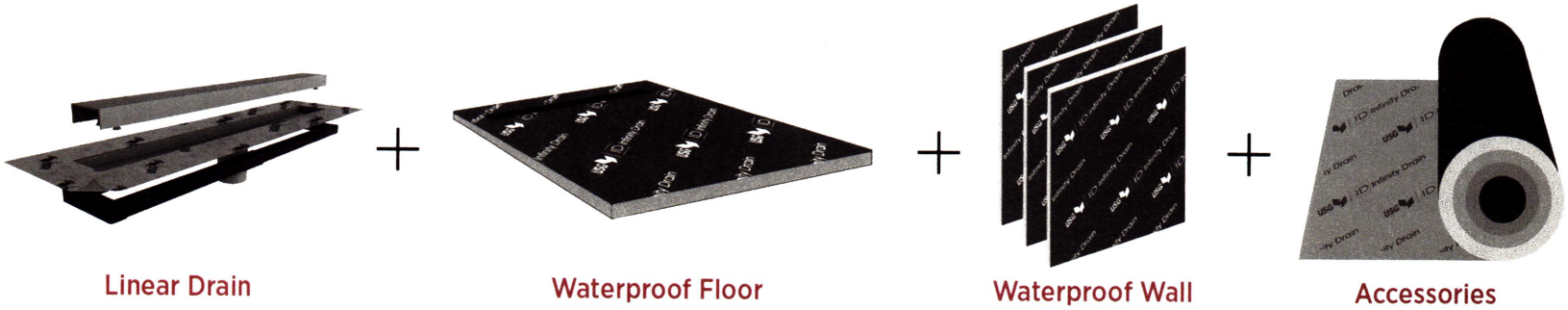
Peter J. Arsenault, FAIA, NCARB, LEED AP, *is a practicing architect, green building consultant, continuing education presenter, and prolific author engaged nationwide in advancing building performance through better design.* ***www.linkedin.com/in/pjaarch***

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PRODUCT REVIEW

Innovative Interiors

Doug Mockett & Company



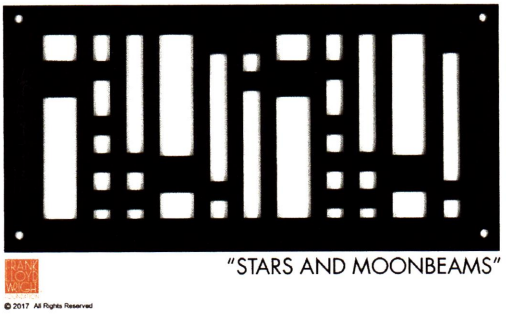
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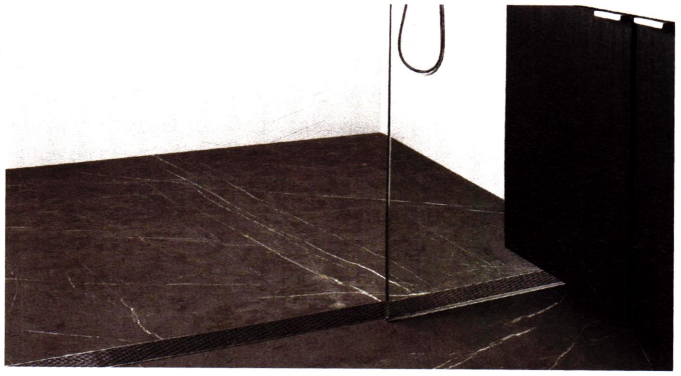
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PRODUCT REVIEW

Innovative Interiors

Infinity Drain

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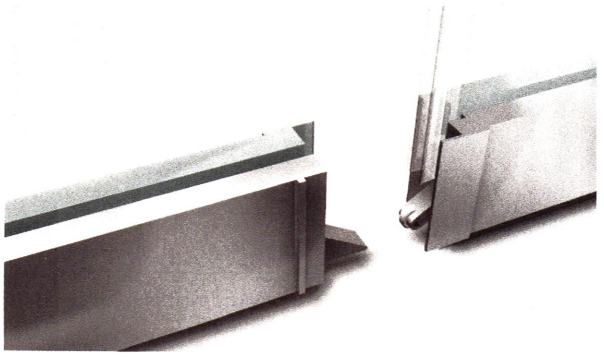
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By Peter J. Arsenault, FAIA, NCARB, LEED AP



Flooring systems can be used to provide innovative designs that address aesthetics, performance, and green building principles as shown here at Wedge Tower in Houston.

Photo courtesy of Construction Specialties

Flooring is one of the most used and most noticeable features of any building interior. Its aesthetic impact is related to both its initial material makeup and the ability of that material to hold up over time with continual use. The presence of not only people walking in all types and manner of shoes but also the things they carry in on those shoes, such as dirt, snow, water, and other contaminants, can wear down the finish of the floor. The use of heavy-duty cleaners and polishes to overcome that issue is the usual response, but some of those can be equally as harsh and damaging to flooring. Further, many floors in commercial buildings need to withstand rolling carts, suitcases, or even small motorized vehicles, all of which add their own stress on the floor system. Beyond all of this, the ubiquitous nature of flooring means that the materials used either in the flooring product itself or the materials needed to install it, such as adhesives or cements, can have a significant impact on the indoor environmental quality of buildings. Hence, it is often the focus of green building design attention.

CONTINUING EDUCATION

1 AIA LU/HSW

Learning Objectives

After reading this article, you should be able to:

1. Identify the aesthetic, green building, and performance significance of floor surfaces as part of the overall interior design of a building.
2. Assess the health and safety performance aspects of floor surfaces as they relate to indoor environmental quality, durability, and sustainability.
3. Explain the importance of floor structure design to enhance space planning, acoustics, and flooring integrity.
4. Determine ways to incorporate principles presented into buildings as shown in case studies.

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In response to the need to not only look good in a variety of colors, styles, and patterns but also to hold up to the usage and environmental demands of commercial buildings, flooring product manufacturers have worked hard to develop and improve their offerings to design professionals. In this course, we will look first at some considerations for the structure that a flooring system rests on and then some of the innovations and options currently available. By understanding flooring choices as well as the characteristics and properties related to those choices, architects and others can design and specify flooring systems that hold up and perform well, contribute to better indoor environments for people, and look great.

FLOOR STRUCTURE

Before delving into particular finish flooring choices, it is important to consider that the structural system of a commercial floor is a critical component of any flooring. As the structural substrate to the flooring, its attributes interact with the flooring in ways that either create favorable conditions for the finish flooring to function or, alternatively, can cause problems. In fact, most finish flooring problems come about not because of problems with the finish material but because of problems with the material or structure underneath it. As such, the attributes of the structural floor system can directly affect the real or perceived attributes of the finish flooring, regardless of what is selected.

Structural floor systems commonly involve steel and concrete, although there are plenty of variations in how they are designed. Traditional, lightweight systems use steel girders, beams, or trusses to support a metal floor deck that is topped with concrete. That can create some deep systems that require a tall floor-to-floor height. Precast concrete or poured-in-place concrete structural floors can be thinner, but those systems need to be assessed for the amount of additional dead weight they create compared to other attributes that may or may not offset the cost of the added weight. With an understanding of the benefits and drawbacks of different traditional systems, it is not surprising that an innovative alternative is becoming popular in the form of long-span composite floor systems that combine the versatility and ease of erection of steel with the strength and durability of concrete. Referred to as a long-span composite floor system, it achieves a thin-slab advantage characterized by a narrow floor structure, longer unobstructed floor spans, and a range of underfloor aesthetic ceiling options. So while these systems address the economy of the structure, they also address the economy of room spaces with an eye on ceiling design, including the efficient integration of acoustical treatments, controlled sound attenuation, and fire resistance.

Long-span composite floors function by using the best of each material in this hybrid or composite system: the tensile strength of a corrugated metal deck and the compressive strength of reinforced concrete. Together, this system allows for longer spans that can eliminate the need for intermediate supports and create a single floor/ceiling assembly that allows more economical floor-to-floor heights. Two common types are as follows:

- **Dovetail composite deck profiles:** This typical profile is capable of supporting clear spans up to 28 feet. Its name comes from the dovetail-shaped profile of the corrugated metal panel that receives the concrete and bonds firmly with it. This can provide extra rigidity and strength that allows finish flooring to function properly without fear of deflection or movement. This profile can be particularly useful in midrise or multistory residential projects, such as hotels, health-care communities, and dormitories where walls between units can support the floor deck without the need for intermediate supports.
- **Deep deck composite profiles:** Deep deck composite floors support even longer, wider, and more open spaces than dovetail profiles. Clear spans up to 36 feet are commonly achievable, meaning they are well suited for buildings where open space and free-flowing interiors are sought.

Since the nature of the composite metal deck profiles can vary notably between suppliers, and so can the structural capabilities, it is advisable to work early on with the technical support staff of the manufacturers. Some of them engineer and offer a complete range of steel building systems, both traditional and new, so they can provide information for architects and engineers to select the best system appropriate to a particular project. That can help a building not only excel in the area of design intent but also holistically take into account related factors, such as material costs, erection costs, performance capabilities, and project timelines. For example, long-span composite floor systems can be engineered to address unique loads that may be imposed by a particular use, such as equipment placed in the building or curtain wall systems that impose loading on the floor edge. Those conditions may cause unwanted vibrations or deflections in the floor. Working collaboratively, the design team and the manufacturing team can determine the best floor system to address those issues with the proper rigidity and load transfer design. That design also helps to assure that whatever finish flooring is placed on top of the concrete, it will not be subject to undue movement, which can cause degradation and failure of the flooring.

COMMON FLOORING CHOICES

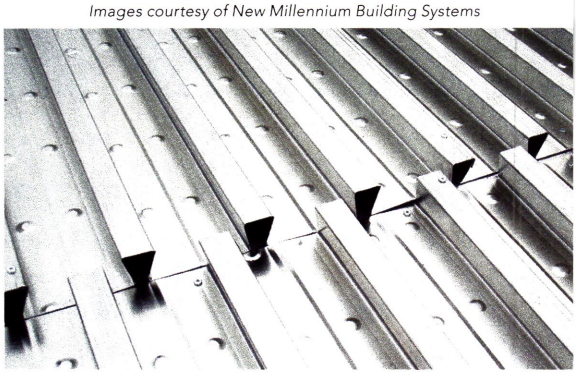
The possible choices in finish flooring are extensive. Selection can be based purely on aesthetic considerations, performance concerns, green building requirements, or some combination of any or all of the above. With that in mind, let's look at some of the innovative choices currently available

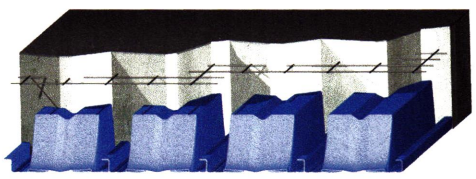
Tile and Stone

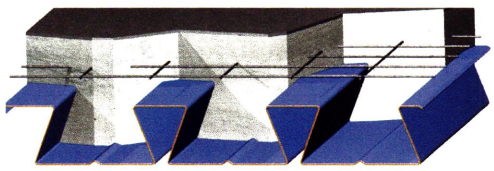
The use of tile and stone for flooring is centuries old, and the available choices reflect that history. The properties and attributes of each of these materials are well-known, and the range of colors, textures, and patterns is impressive. One of the recent innovations here is the use of large-format porcelain tile (officially known as gauged porcelain tile/panels/slabs) made possible by modern manufacturing equipment and processes that can consistently produce quality products. Directly related to this innovation has been the need for new lightweight mortars designed specifically for large

Images courtesy of New Millennium Building Systems

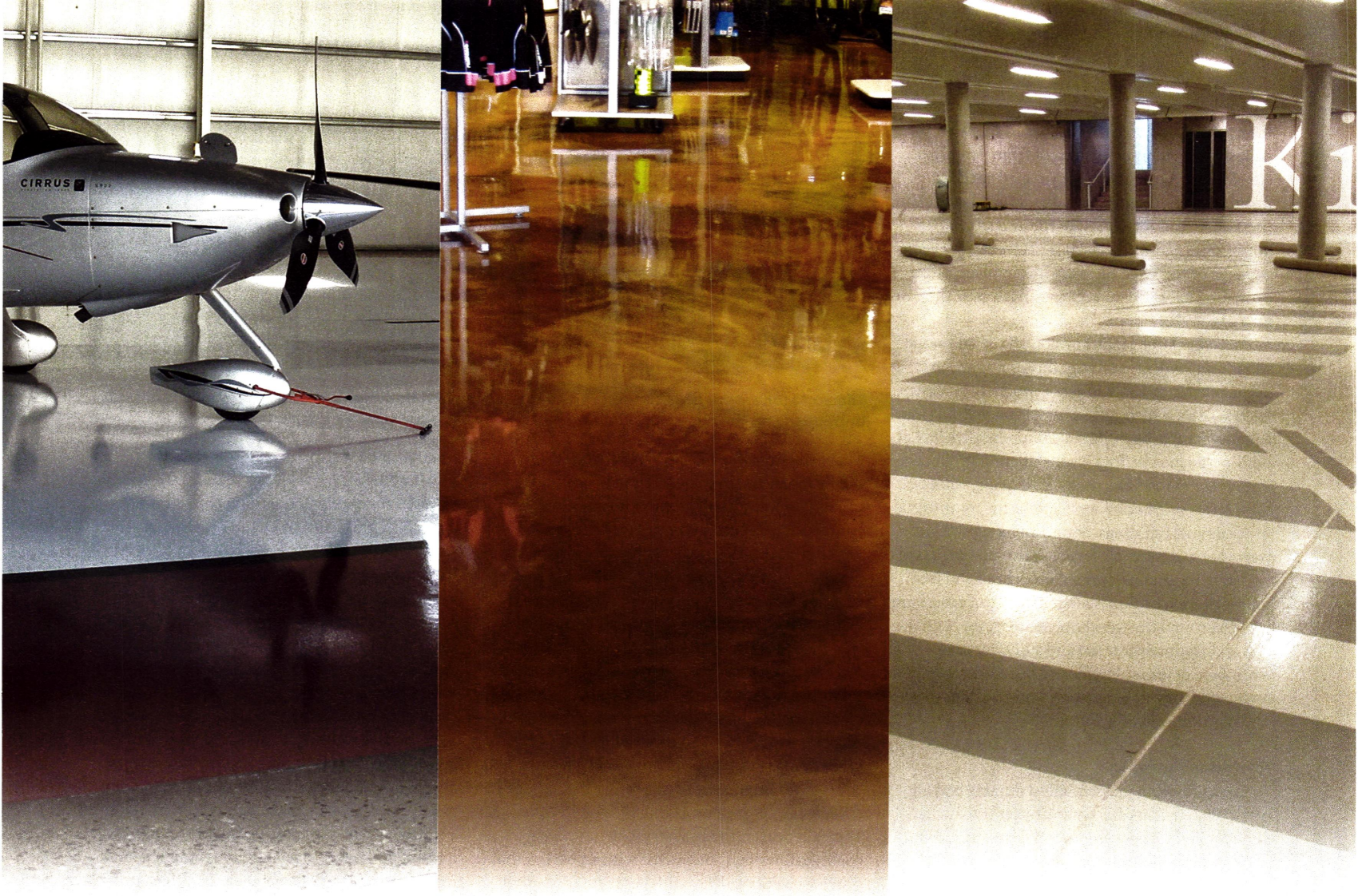








Dovetail composite deck profiles (top right and bottom right) are well suited to residential buildings with clear open spans between dividing walls. Deep deck composite profiles (bottom left) allow even longer clear spans for buildings of all types.



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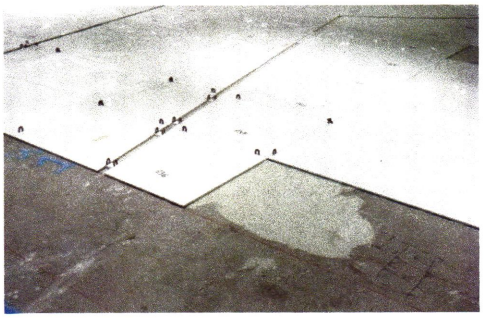
CIRCLE 319

tile installations. Accordingly, manufacturers of adhesive mortars (i.e., different from producers of tile and stone) have developed specific formulations designed for large, gauged porcelain tile/panels and large-format tile and stones, for both floors and walls. Such mortars can prevent slippage of the large tile once it is in place, while providing exceptional bond strength over the full area of the tile.

Whether large format or not, all tile and stone work is dependent on the quality and makeup of the mortar, grout, and other products that are necessary for a successful installation. Identifying a manufacturer that offers a comprehensive line of high-performance flooring installation products is important to meet the needs of flooring, whether for interior or exterior applications for commercial or residential buildings. Some offer a significant warranty to cover a professional installation based on following manufacturers' guidelines and recommendations. Many such mortars and grouts are proven around the world in virtually every climate and application where tile and stone are used. Their ease of use, strength, and durability help architects bring designs to life knowing that they will perform well over time.

Photos courtesy of LATICRETE





Tile and stone work is a common choice for commercial flooring, but its performance is directly dependent on the choice of adhesive mortars and grouts used for installation.

Resinous Flooring

Resinous flooring is essentially a durable coating over concrete that offers many benefits to owners and specifiers. There are several types, including epoxies, acrylics, and urethanes, but one of the more innovative options is referred to as a polyaspartic concrete coating. Polyaspartics are seamless, high-performance polymer coatings designed for protection that are often viewed as a variation or type of polyurea coating. They were first developed in the early 1990s as a protective coating for steel bridges subject to harsh outdoor environments. Today, polyaspartic coatings are widely used in protective resinous concrete floor coating applications, both interior and exterior. Generally, any type of environment where a resinous concrete floor coating is called for, a polyaspartic coating system may be used. This includes heavy-traffic industrial and commercial flooring as well as residential garage floor coatings.

One of the primary benefits to polyaspartic coatings is the versatility of the material. Common coating systems can be selected from standard solid colors for industrial floors, but seamless flake and monolithic quartz flooring systems are also common. Recently, new decorative floor coating applications, such as dye and seal and metallic floor coating systems, have been developed. From a performance standpoint, based on empirical testing data, polyaspartic coatings offer abrasion-resistant capabilities that exceed those of typical epoxy systems. During installation, polyaspartic coatings may be applied with a squeegee, seal-coat broom, or even a simple nap roller and will dry in a matter of hours, allowing use of the floor the next day. And, depending on the formulation, polyaspartics may be applied in extremely low temperatures below 32 degrees Fahrenheit (0 degrees Centigrade).

All resinous floorings, such as polyaspartics, provide significant benefits to a building project. The first is the ability to be a visually attractive, decorative concrete option that can be customized in appearance and finish. At the same time, it is a very durable choice that can be formulated for dramatic wearability and resistance to harsh conditions. This includes formulations that are resistant to chemicals that can cause stain or other damage that may be present in a facility. Of course, it is important to remember that a floor coating is only as good as its adhesion to concrete. Typically within the industry, concrete floor coating adhesion is measured with a pull test that provides a PSI reading, with concrete fracturing at 400 PSI of pull force. Coatings at or above this reading are recognized as having optimal substrate adhesion. From a user perspective, resinous floorings can achieve slip-resistance factors that are consistent with The Americans with Disability Act or other accessibility standards. Finally, related to floor maintenance, investing in a proper concrete floor coating can make floors easier to clean, which is particularly beneficial for high-traffic areas. Such maintenance can be enhanced when resinous coatings are applied up the base of a wall, allowing for a cove or seamless transition between the wall and the floor, thus eliminating joints or seams where dirt and bacteria can thrive.

Photo courtesy of LATICRETE



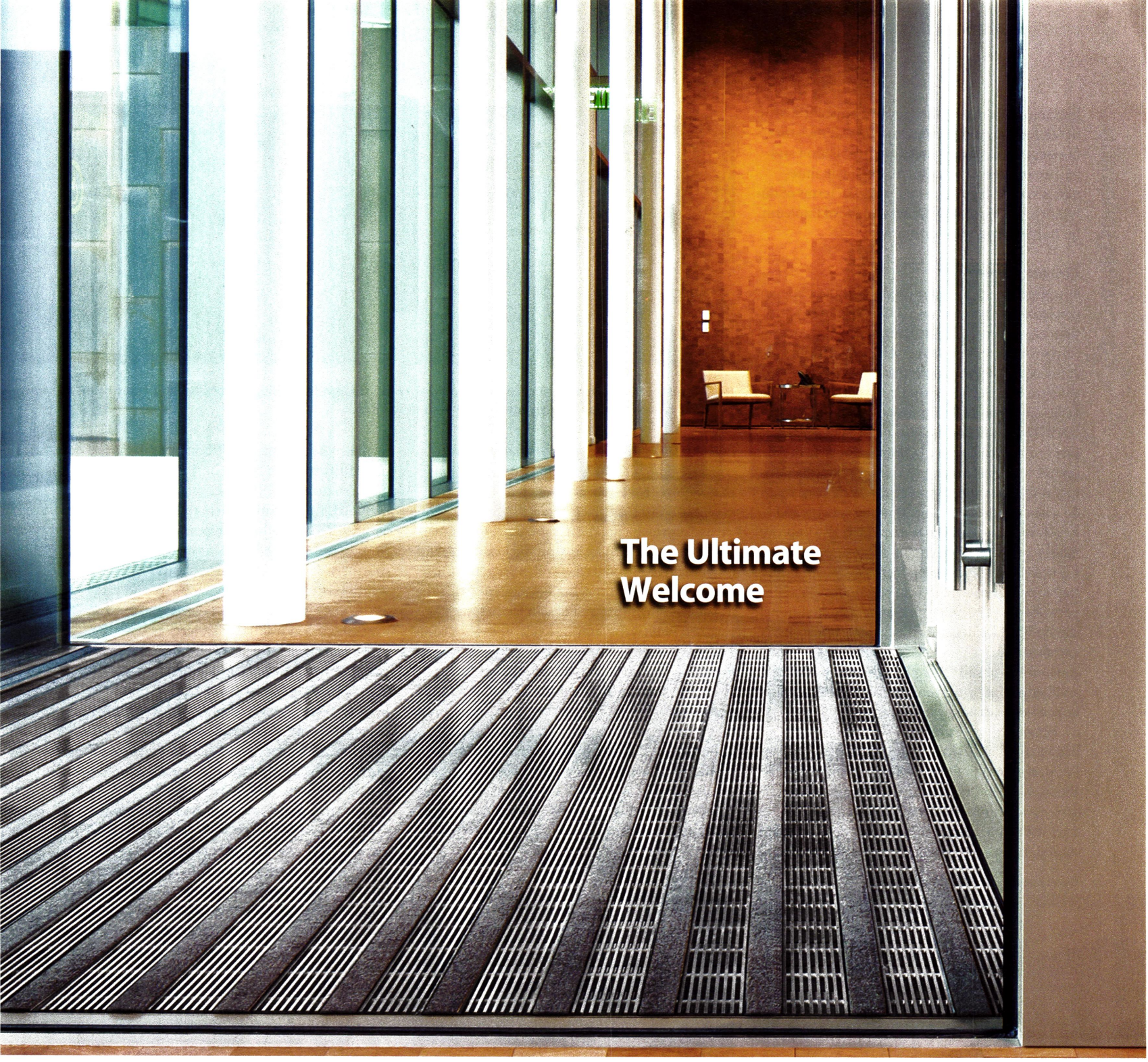
Resinous flooring, including polyaspartic coatings, provide a durable, attractive way to finish concrete surfaces.

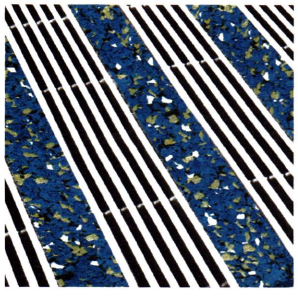
Resilient Flooring

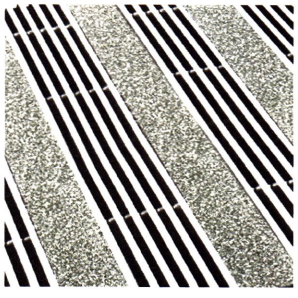
Resilient flooring includes a range of materials that are characterized by their ability to take some pressure or force and "bounce back" from that force to look as good as new. These include things like vinyl composition tile (VCT), vinyl sheet goods, PVC flooring, or rubber products. Sometimes overlooked in this category is linoleum, which was first invented in 1860 and has always been considered to be an excellent, inexpensive material for high-use areas. It has enjoyed a resurgence in use lately because of its use of all natural and mostly bio-based ingredients, making it a very sustainable choice. These ingredients include rosin tapped from pine trees, linseed oil obtained by pressing the seeds of the flax plant, wood flour made from timber grown in controlled forests, cork flour made by grinding the bark of the cork oak, and limestone found all over the world in enormous quantities. Added to this combination, ecologically responsible pigments are selected to create a wide range of attractive colors, while backing material, including webbing for the linoleum, can be made from natural jute grown as a renewable material.

Linoleum-finished products using these natural ingredients commonly include sheet, tile, and specialty floor coverings that are very well suited to the needs and demands of a healthier, safer indoor environment. That is in part because it is easier to clean and care for than other resilient flooring alternatives. But another important characteristic is its ability to provide natural antimicrobial functions without using any pesticides or biocides. Linoleum is made of natural ingredients that resist microbial growth by their very nature.

There are some practical benefits from installing linoleum as well. The nature of the product is that pieces seal tightly together, meaning that seam welding is not required, thus saving time and cost in installation. Linoleum also outperforms vinyl and rubber in dimensional stability,







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hygienic protection (when properly installed with net fit seams), and resistance to topical moisture. Linoleum is occupancy ready at installation and half as expensive to maintain, freeing maintenance staff to focus on other work. In terms of durability, the 25- to 40-year service life of linoleum far outperforms vinyl or rubber.

Entrance Flooring

Too often, one of the most overlooked and underappreciated products within a building is an entrance flooring system, which is an engineered mat or grid flooring system designed to trap dirt and debris at the door. They're usually the last products to get installed, and one of the first products to get value-engineered off the project. However, they are one of the most functional and cost-saving products that can be included in a building relative to their overall cost. That is because entrance flooring stops dirt at the door, thereby reducing the damage it can do when tracked over other flooring systems and greatly reducing maintenance costs. It also improves indoor air quality by reducing airborne particles and the need for harsh cleaning chemicals. Since it can trap rainwater too, dangerous conditions like slippery floors can be reduced, thus helping to eliminate slip-and-fall accidents. There is a wide range of entrance flooring products available, so selections can be made to suit different building types, usage, and budgets, all while contributing to a positive first impression at doorways and entrances.

Permanent entrance flooring systems have been manufactured and incorporated into buildings since the 1960s, so they have proven themselves repeatedly over time. Products include systems that are made from aluminum or stainless steel with common choices of computer-milled, modular mats, and grids. There are options for both surface-mounted systems that sit above a concrete floor and recess-mounted applications that require that the concrete slab be formed to accept it. Most manufacturers will provide technical assistance during the design phase to assure proper sizing coordination, product samples, and other details. Through this collaboration, products can be selected that are best suited to different building types and design factors, such as weather, foot traffic, rolling loads, and ADA compliance. It allows architects and designers to gain insights into addressing the complexities of proper space layout and product choices for different applications. It also helps determine which aesthetic options and materials will best suit the overall design intent to either blend with the surrounding flooring or provide a visual accent. Once the project moves from design into construction, the manufacturing team can assist with field-verified dimensions, onsite technical support, product mockups, and sample coordination.

Photos courtesy of Forbo Flooring Systems/Fred Gerlich Photography





Resilient flooring made from linoleum provides color, design flexibility, durability and the green building benefits of all natural and renewable materials.

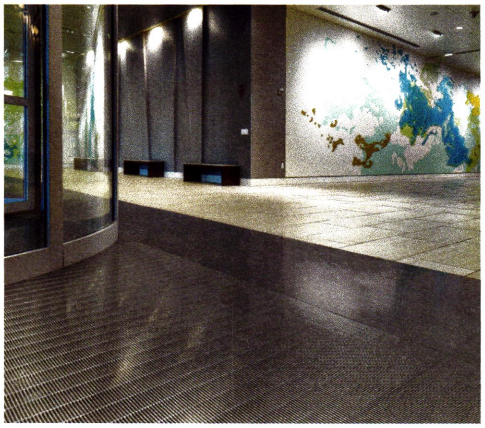
The value of entrance flooring systems is most fully realized by the building owners and maintenance staff. If these systems are not included, then many owners resort to hiring a laundry service to bring in portable, roll-out floor mats that need to be washed and replaced routinely depending on the conditions. That solution simply traps as much water and dirt as the mats will hold, often creating saturated, overloaded conditions that overflow onto the rest of the flooring. The cost of this ongoing maintenance can quickly exceed the cost of installing a proper entrance mat system in the first place. Wade Brown, senior product marketing manager of Construction Specialties, notes, "If entrance flooring systems are not designed and included at the time of construction, it becomes the owner's problem to solve how to best keep dirt and water from entering through their front door, and ultimately protect all the building's occupants from hazards, such as slips/falls and poor indoor air quality. The architect's decision on what products to use, or whether to use them, can have a lasting effect on those who inhabit the building over its life time." Overall, by stopping dirt at the entrance, the rest of the building thrives. Since entrance flooring systems are known for their durability with systems that stand up to years of foot traffic, heavy equipment, harsh weather conditions, and tracked-in debris, it is easy to see why they have very favorable payback periods.

Continues at ce.architecturalrecord.com

Peter J. Arsenault, FAIA, NCARB, LEED AP, *is a practicing architect, green building consultant, continuing education presenter, and prolific author engaged nationwide in advancing building performance through better design.* ***www.linkedin.com/in/pjaarch***

Photos courtesy of Construction Specialties





Entrance flooring systems can be incorporated into buildings to trap dirt, debris, and water from entering the rest of the building while being fully integrated into buildings, such as at Owego Elementary School in Owego, New York, (left) and the Westin Denver Airport in Denver (right).

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PRODUCT REVIEW

Innovations in Flooring

Construction Specialties

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Floorometry®

Floorometry is a permanent entrance flooring system comprised of stainless steel modular tiles. This product is installed at the main entrance or vestibule of a building and helps to trap incoming dirt and debris. Floorometry is available in four distinct models and can be easily integrated into any design.

www.c-sgroup.com/floorometry *Circle 457*

Forbo Flooring Systems

Photo courtesy of Forbo



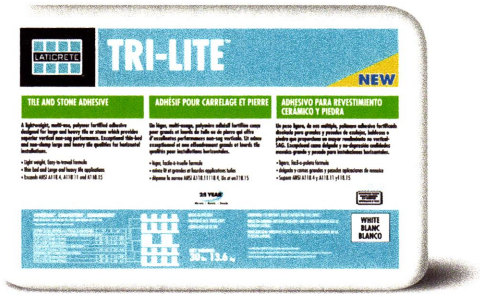
Marmoleum Slate

Forbo's innovative Marmoleum Slate collection features the look of natural slate with the durability and performance of Marmoleum. Available in six organic designs, slate features inherent antimicrobial and antistatic properties that improve indoor air quality and resist bacteria growth without chemical additives. Slate's sustainable finish provides exceptional performance against real-world flooring damage.

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Image courtesy of LATICRETE



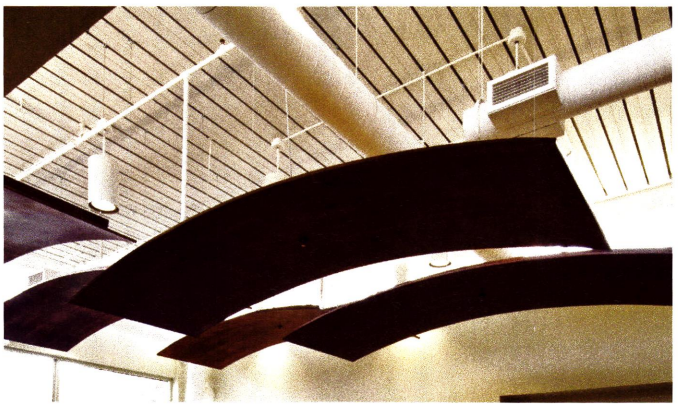
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New Millennium Building Systems

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The Versa-Dek® Advantage

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Photo courtesy of Milgard® Windows & Doors



Fiberglass four-panel sliding French patio door

Fiberglass Manufacturing and Window Performance Testing

Sponsored by Milgard® Windows & Doors

More mainstream window and door manufacturers are introducing fiberglass profiles to meet the demands of most architects and designers. These profiles are available in various sizes and operations suitable for almost any project. The energy performance ratings of a fiberglass frame is similar to that of vinyl windows, especially when adding high-performance glass. The fiberglass production process now enables complex profiles required for the look of painted wood windows, and many offer wood interiors with the option of a durable exterior while enhancing the interior with the warmth and beauty of various wood species.

Continues at ce.architecturalrecord.com

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Learning Objectives

After reading this article, you should be able to:

1. Discuss the history of fiberglass for fenestration and how fiberglass allows for a strong, durable, and low-maintenance frame type.
2. Explain the fiberglass pultrusion and manufacturing process.
3. Define a window's performance grade (PG) and design pressure (DP) ratings, and describe how they are related.
4. Ensure that an AAMA air test is performed for DP ratings.

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Fire Prevention in the Modern Era

Using the right tools can help maintain value while meeting the challenges of increasingly restrictive industry standards and requirements

Sponsored by CertainTeed Insulation | *By Andrew A. Hunt*

Making buildings safer for occupants in the event of fire is the responsibility of everyone involved through the design and construction phases of a building. This is especially true for architects and designers, as this responsibility begins with material considerations. Fire codes are in place to ensure buildings are as safe as possible. The materials and assemblies that architects and designers specify must meet the requirements of these codes; however, the path to code compliance is not always straightforward. Perhaps because fire-related deaths are so tragic, some manufacturers advertise their products' fire-prevention benefits based on attributes that may not be necessary or practical in real-world scenarios. Consequently, there are several myths around how building products, such as insulation, can contribute to an effective fire-prevention strategy. Specifying the most appropriate product starts with a good understanding of fire codes, fire ratings, and the range of insulation products available to help you both meet fire-related code requirements and satisfy the other goals of your project.

THE EVOLUTION OF FIRE CODES

According to the National Fire Protection Association (NFPA), structural fires occur every 61 seconds throughout the year in the United States. Smoke from building fires accounts for 73 percent of fire-related deaths. Building codes have evolved over the decades, with the goal of improving fire safety and reducing fire-related deaths. For example, codes now require that many building products and assemblies resist flame spread and smoke development for extended periods of time. Yet many of the design features we take for granted in commercial buildings, including how buildings are physically located in relation to the street and to each other, have come at great cost.

Continues at ce.architecturalrecord.com

***Andrew A. Hunt**, vice president, Confluence Communications, has 16 years of experience in green building and has produced more than 100 educational and technical publications.*
www.confluencecommunications.com

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Learning Objectives

After reading this article, you should be able to:

1. Discuss the history of fire codes and their impact on safety in commercial buildings.
2. Explain how building materials, specifically insulation, are rated for fire prevention.
3. Describe how insulation is an important component in a code-compliant fire-prevention design.
4. Distinguish between common myths and truths in the marketing of fire-rated insulation.
5. Understand the importance of specifying insulation that best serves the fire-prevention needs of the project.

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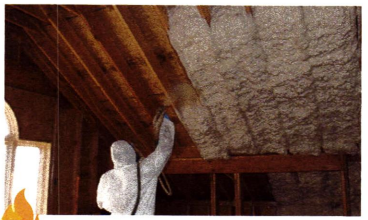
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CIRCLE 19



Floor squeaks can be a sign of construction problems. Overcoming them and creating a quality finished project requires attention to all aspects of a floor system.

Overcoming Structural Floor Squeaks in Wood-Framed Construction

Image © 2017 Huber Engineered Woods LLC

Finished floors only perform as well as the subfloor beneath them

Sponsored by AdvanTech subflooring by Huber Engineered Woods LLC

By Peter J. Arsenault, FAIA, NCARB, LEED AP

Wood-framed buildings are quite well understood by architects, carpenters, building code officials, and others, so why are there so many squeaky wood floors? The concepts of platform framing have remained the same for decades. Even though material choices have changed, the basic principles haven't. Of course, dimensional framing lumber has gotten smaller in actual dimensions, floor spans have tended to increase, and the availability of high-quality wood has decreased, all of which could be contributing factors. In response, engineered wood products have filled the void by providing consistently strong, stiff materials in the form of trusses, laminated veneer lumber oriented strand board, plywood, I-joists, and other advanced products. Fasteners and adhesives have also gotten better with some notable engineering improvements. Could it be a labor problem? With labor shortages crunching time availability on jobs and a lack of experienced tradesmen in general, perhaps the floor framing system is being rushed and quality control is suffering. Perhaps it is a combination of all of these things in different degrees in different projects. Whatever the reason, squeaking wood floors are a problem for owners, occupants, contractors/builders, and architects because they scream an impression of poor quality and problems with the construction. Consideration of best construction practices and advanced material options from frame to finish can help designers specify solutions to help mitigate the potential for squeaks and related problems.

Continues at ce.architecturalrecord.com

Peter J. Arsenault, FAIA, NCARB, LEED AP, *is a practicing architect, green building consultant, continuing education presenter, and prolific author engaged nationwide in advancing building performance through better design.* ***www.linkedin.com/in/pjaarch***

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Learning Objectives

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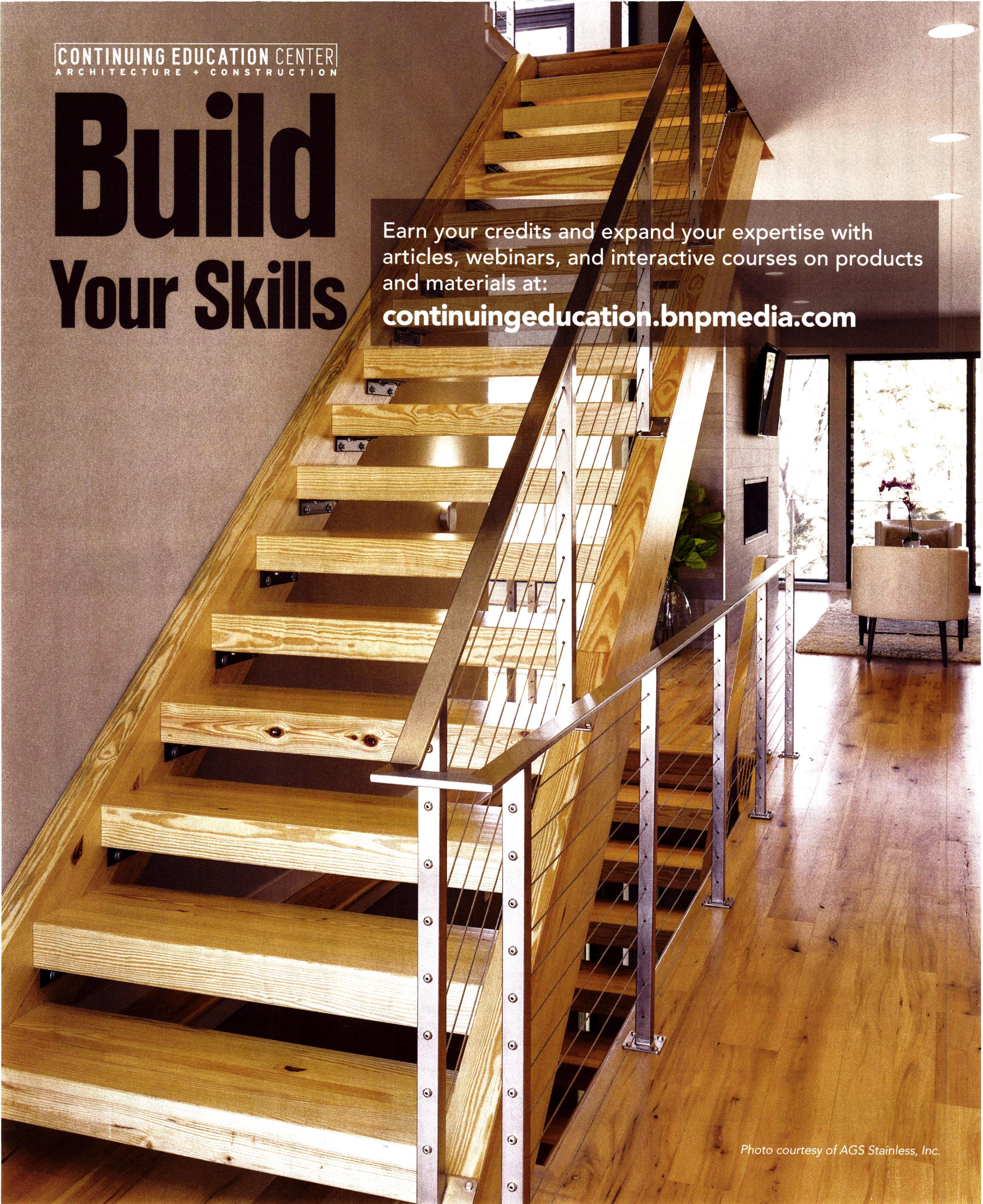
1. Identify the durability and safety characteristics of high-performance wood-framed floor systems with superior strength and stiffness attributes.
2. Investigate the multiple components of a wood-framed floor system, and the ways that they all contribute to improved performance and the elimination of movement and floor squeaks.
3. Assess the functional contributions of engineered wood subflooring as it relates to structural strength, fastener retention, water resistance, and overall stiffness.
4. Design and specify wood-framed floor systems that perform as intended and reduce or eliminate squeaks that are harbingers of other issues.

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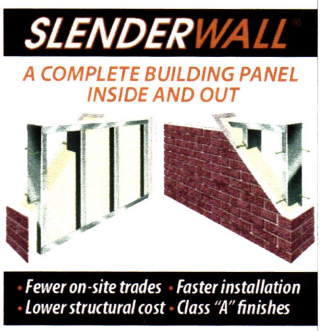
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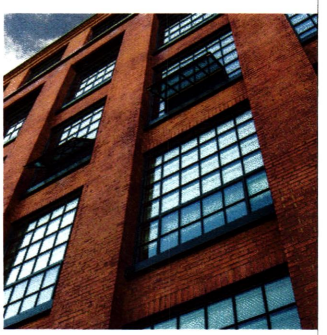
With its floating vent, large openings, minimal sight lines and applied grids, the SR6700 Series window replicates historic steel windows.

Product Application:

- State-of-the-art thermal technology in antiquated design for historic and commercial applications
- Meets needs of the National Park Service and Department of Energy

Performance Data:

- Architectural grade aluminum window with exceptional air, water, structural and thermal performance
- AAMA and NFRC tested and certified product



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800.755.6274 | jeisenbeis@grahamwindows.com

Circle 401

DOORS, WINDOWS

LIFT-STRAP BIFOLD DOORS AND ONE-PIECE HYDRAULIC DESIGNER DOORS

WR

Schweiss Doors, Moving Walls

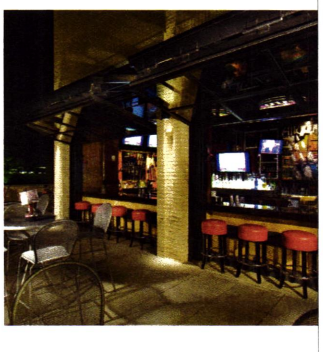
Schweiss Doors manufactures unique custom designer doors, one-piece hydraulic doors and patented lift-strap opening/closing bifold doors.

Product Application:

- Moving doors and walls
- You think it, we build it
- Custom designed storefronts and more...

Performance Data:

- Faster, safer operation
- Zero lost headroom
- Superior design that keeps working!



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Circle 402

SPECIALTY PRODUCTS

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Construction Specialties Expansion Joint Covers

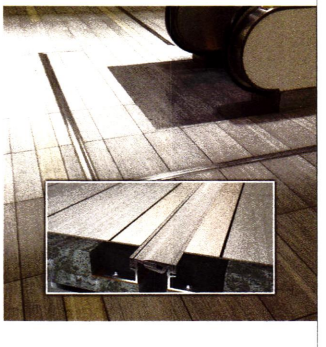
The APF system's heavy duty design allows for a smooth transition of rolling loads and is for high foot traffic areas.

Product Application:

- Smaller joint sizes ranging from 1"– 4"
- Handles horizontal and vertical movement
- Ideal for malls and airports

Performance Data:

- Withstands frequent, heavy rolling loads
- Low maintenance
- Fire rated models available



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INTERIOR FINISHES, FURNISHINGS

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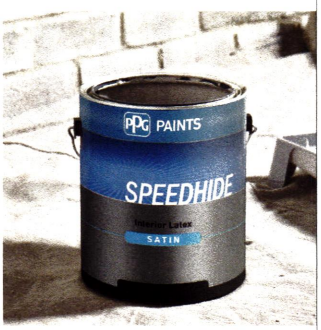
Formulated to meet the requirements of professional applicators, this product provides a smooth satin finish, durability and excellent burnish resistance.

Product Application:

- Concrete/masonry block
- Gypsum wallboard/drywall
- Plaster, wood and ferrous metal

Performance Data:

- Less than 50 g/L VOC level meets the most stringent VOC regulations nationwide
- Meets MPI #52, Interior Latex, Gloss Level 3



ppgpaints.com
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Circle 404

MATERIALS

UNLIMITED COLOR PALETTE WITH BRICK

Glen-Gery

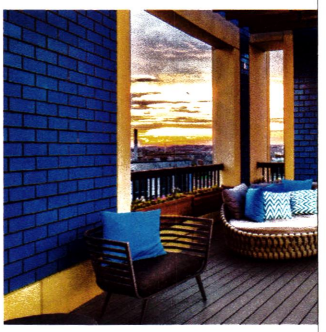
Beyond conventional imagination, Glazed Brick is available in a range of standard and fully customizable colors, surpassing the ordinary and taking brick to new heights.

Product Application:

- Park Chelsea Apartments, Washington, DC
- Jefferson Davis Library, Biloxi, MS
- Children's Hospital of Michigan, Detroit, MI

Performance Data:

- Impervious ceramic glazes are resistant to graffiti and abrasion
- Long lasting, fade resistant colors
- Clear or colorless glazes can be applied to traditional brick



www.glengery.com
484-334-2878 | info@glengery.com

Circle 405

MECHANICAL SYSTEMS, HVAC, PLUMBING

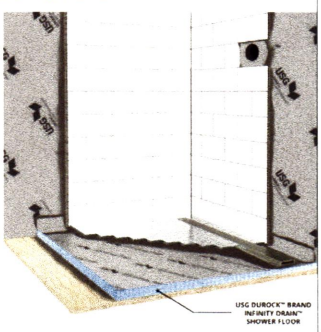
COMPLETE WATERPROOF SYSTEM FOR TILED SHOWERS

USG Durock™ Brand Infinity Drain™ Shower System

One complete waterproof shower installation made easy. Pairs high-performance Durock™ Brand Shower System components with decorative linear drains from Infinity Drain.

Performance Data:

- Easier and faster to install than traditional shower construction.
- Bonded waterproofing system with pre-sloped floor made for tile shower installations.



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Circle 406

MATERIALS

RESIDENTIAL LAMINATE

WR | GREEN | NEW

WILSONART

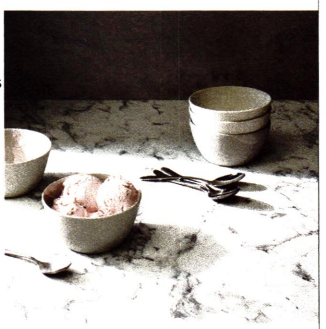
New **laminate** designs inspire **personal luxury** in shades of white and grey stones, warm woodgrains, chic concrete and cool metals, creating the **perfect canvas** for **personalized**, extravagant **spaces**.

Product Application:

- Suitable for residential and commercial countertops, and vanities, backsplashes, fixtures, furniture, and closets.

Performance Data:

- Wilsonart® HD® Laminate features Antimicrobial Protection and AEON™ Scratch & Scuff Resistance
- Wilsonart® Premium Laminate carries AEON™ Scratch & Scuff Resistance
- Wilsonart® Standard Laminate offers reliable performance and great value

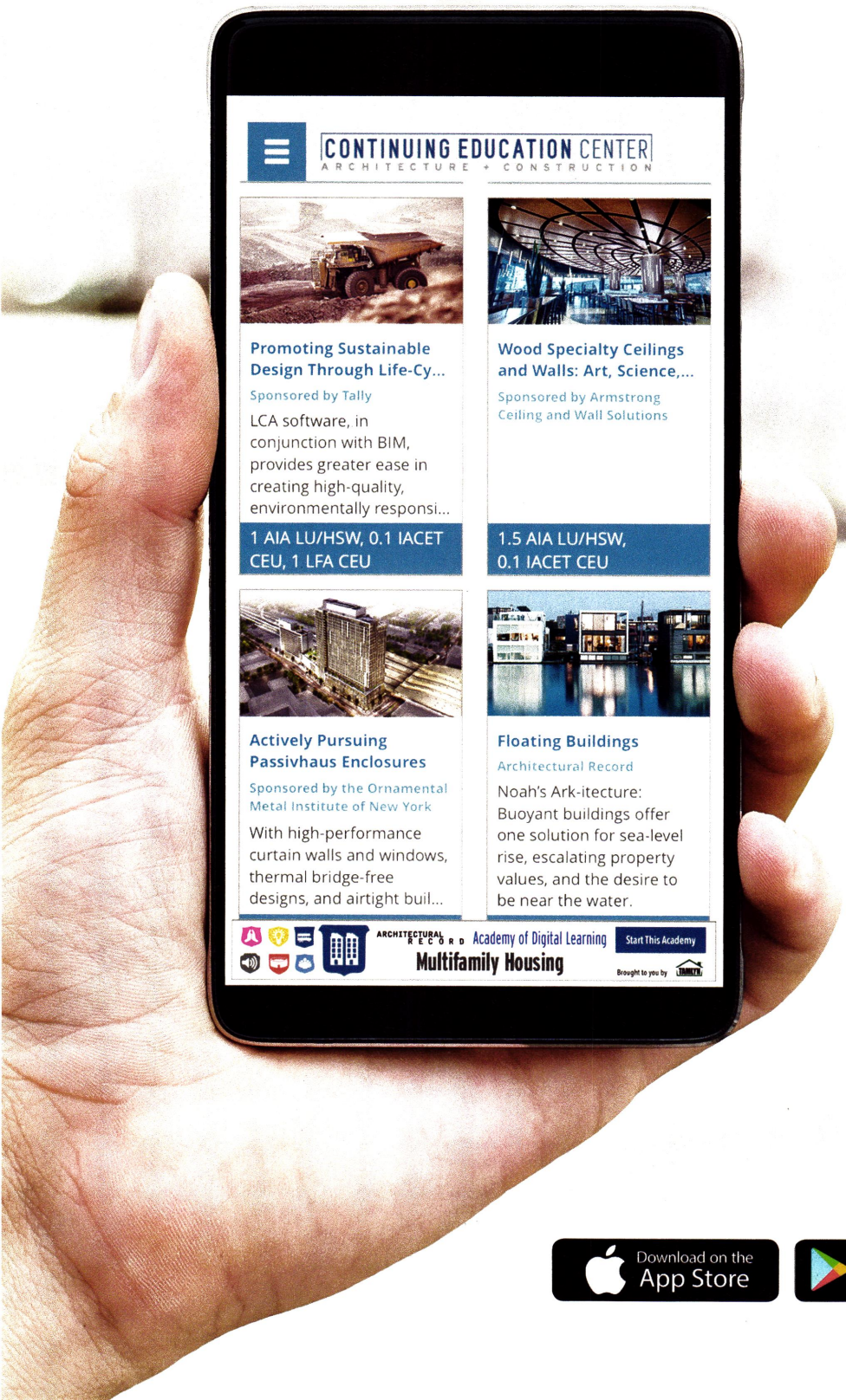


Wilsonart.com/curated-luxury
800.433.3222 | smartline@wilsonart.com

NeoCon Booth 7-1022

Circle 407

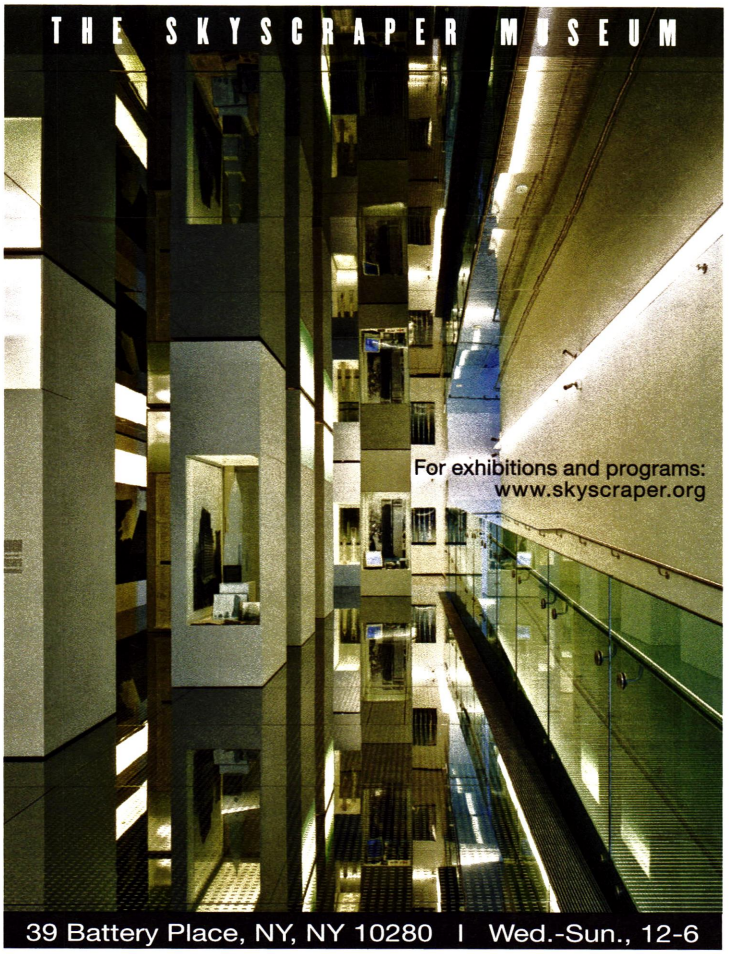
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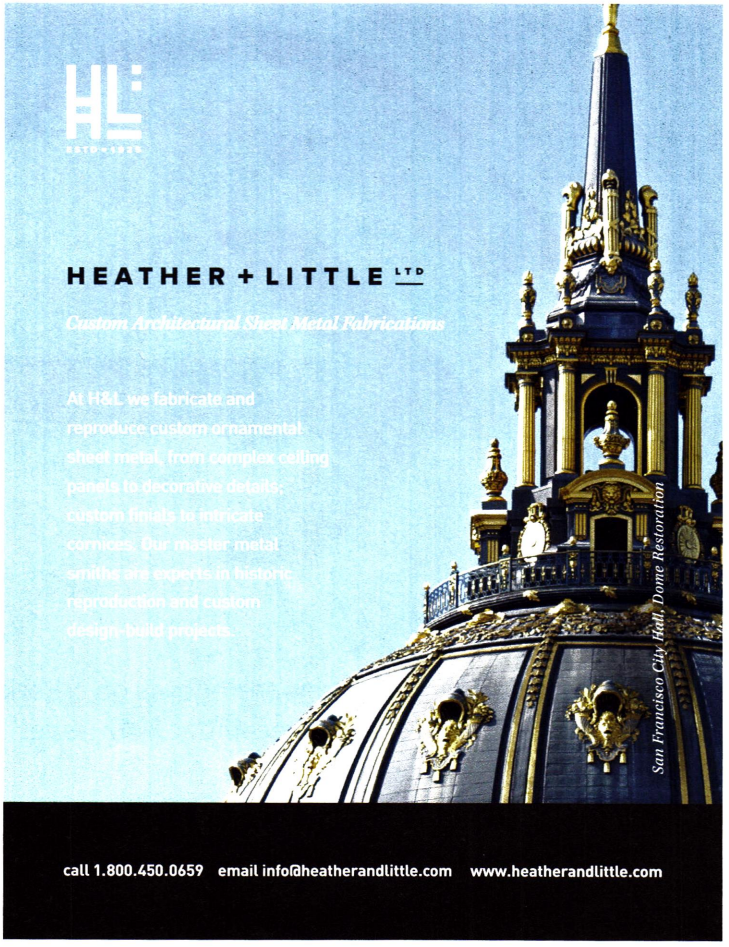


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CIRCLE 60



CIRCLE 23

2017 CALL FOR ENTRIES
Design Vanguard



The editors of ARCHITECTURAL RECORD are looking for the best emerging architecture firms from around the world to feature in our 2017 Design Vanguard issue. Although we do not have an age limit, we try to select architects and designers who have had their own practices for less than 10 years. Winners will be featured in the December 2017 issue.

There is no fee to enter. For full details and to submit your entry, visit: architecturalrecord.com/call4entries.

Submissions are due September 2, 2017.

2017 CALL FOR ENTRIES
Record Products

The editors of ARCHITECTURAL RECORD are currently accepting submissions for the 2017 Record Products competition. Manufacturers and designers may submit items introduced in the U.S. between September 2016 and September 2017. A panel of architects and specifiers will judge the entries on criteria including innovation, functionality, and aesthetics. Winning products will be featured in the December 2017 issue.

The fee is US$25 per entry. For full details and to submit your entry, visit: architecturalrecord.com/call4entries.

Submissions are due September 2, 2017.





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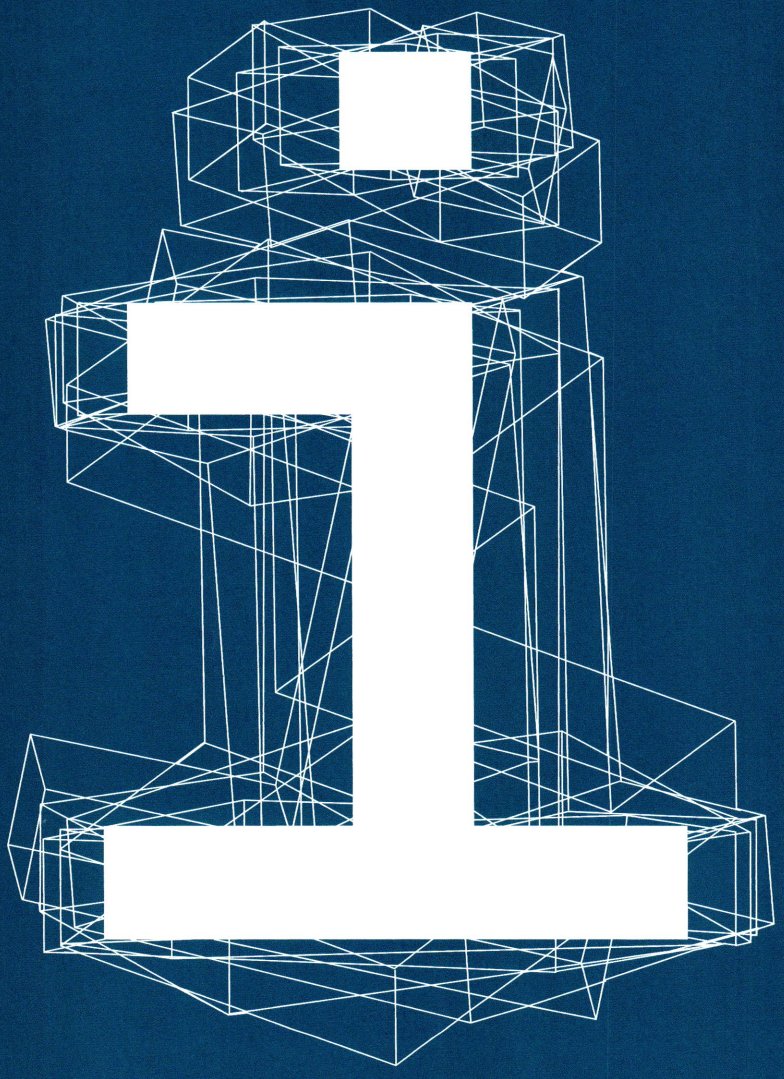
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New and Upcoming Exhibitions

Hansel & Gretel
New York City
June 7–August 6, 2017
Jacques Herzog and Pierre de Meuron team up with Ai Weiwei for a large-scale installation commissioned for the Park Avenue Armory. Referencing the story of Hansel and Gretel, the interactive exhibit explores the meaning of public space in a surveillance-laden world. Visit armoryonpark.org.

Frank Lloyd Wright at 150: Unpacking the Archive
New York City
June 12–October 1, 2017
Marking the 150th anniversary of the American architect's birth, this exhibition at the Museum of Modern Art will comprise approximately 450 works made from the 1890s through the 1950s, including architectural drawings, models, building fragments, films, television broadcasts, prints, furniture, tableware, textiles, paintings, photographs, and scrapbooks, a number of which have rarely or never been publicly exhibited. Visit moma.org.

Ongoing Exhibitions

Mies van der Rohe and James Stirling: Circling the Square
London
Through June 25, 2017
Comparing the design methods of two of the most highly recognized architects of the 20th century, this exhibit at RIBA offers a renewed look at their respectively iconic architectural schemes proposed for the same London site. The exhibition features newly restored models and materials and other items that provide insight into the workings of the Stirling office, from initial sketch ideas to Stirling's famous "worm-eye" axonometric views. For more information, visit riba.org.

Todd Eberle: Empire of Space
San Diego
Through June 24, 2017
Empire of Space highlights the work of photographer Todd Eberle, this year's recipient of the Julian Shulman Institute Excellence in Photography Award. The exhibit will feature some of Eberle's best-known images, among them portraits of Hillary Rodham Clinton, Frank Gehry, Julius Shulman, Florence Knoll Bassett, Martha Stewart, David Adjaye, Peter Zumthor, and Phillip Johnson. Visit wuho.architecture.woodbury.edu.

Lectures, Conferences, and Symposia

Architectural Record Innovation Conference West
San Francisco
June 7, 2017
RECORD brings together architects, designers, and industry leaders who are generating a range of creative solutions for the built environment today and into the future. Keynote speakers include Elizabeth Diller, Craig W. Hartman, and Thom Mayne. At the Mission Bay Conference Center at UCSF. For more information, visit west.arinnovationconference.com.

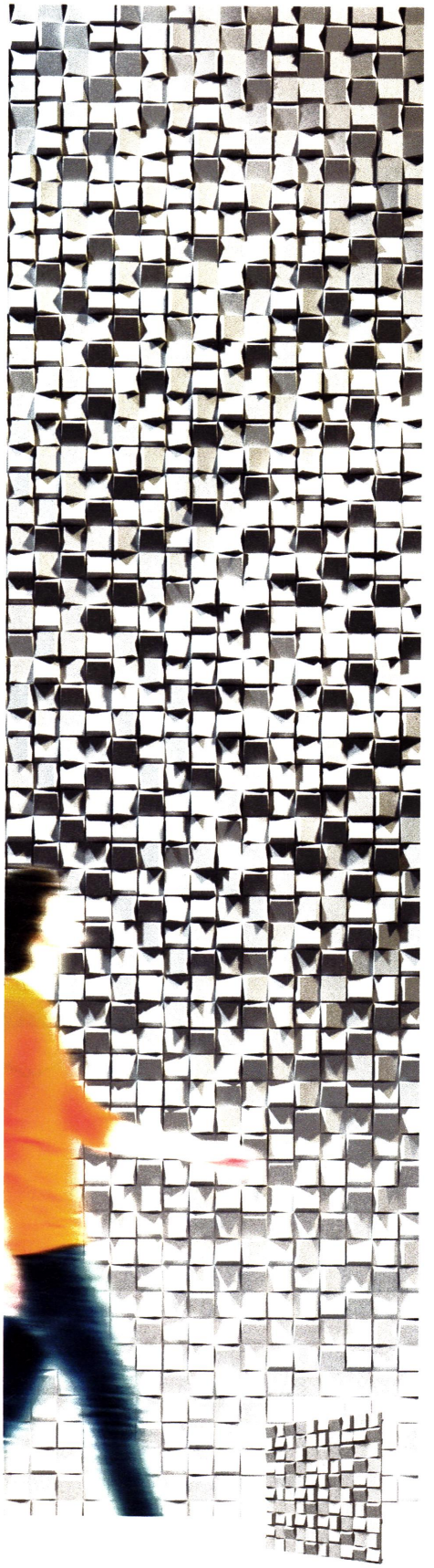
NeoCon
Chicago
June 12–14, 2017
This three-day event features nearly 1 million square feet of exhibition space, three floors of showrooms, and one floor of temporary exhibitors. Thousands of new products, including contract accessories, floor coverings, furniture, lighting, technology, textiles, tile, stone, and other surfaces, will be launched. At the Mart. For more information, visit neocon.com.

Mundaneum 2017: re_Thinking Architecture and Cities in the Americas
San Jose, Costa Rica
July 5–7, 2017
This event at the School of Architecture of the Universidad Véritas offers critical observations concerning the current state of architecture and cities in the Americas and explores new visions of the built environment in the context of the clashing realities in the region. Speakers include Alejandro Echeverri, Michael Sorkin, Neil Brenner, Michael Rotondi, Juvenal Baracco, James Wines, Carlos Cubillos, and Patrick Dillon. For more information, visit facebook.com/MundaneumCostaRica2017.

Competitions

International Student Tall Building Design Competition
Submission deadline: July 24, 2017
This competition from the Council on Tall Buildings and Urban Habitat (CTBUH) aims to shed light on the meaning of tall buildings in modern society. Proposals should show evidence of a clear understanding of how considerations of structure, environment, servicing, etc., are as vital to the success of a tall building as the form, materials, and aesthetics. Visit ctbuh.org.

E-mail information two months in advance to recordevents@bnpmedia.com.



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snapshot

PROJECT KAMIKATZ PUBLIC HOUSE
LOCATION KAMIKATSU, JAPAN
ARCHITECT HIROSHI NAKAMURA & NAP



DEFINED BY a 26-foot-tall patchwork of repurposed windows, the Kamikatz Public House takes recycling to new heights. The combined brewery, bar, and general store is located in Kamikatsu, a Shikoku island town in southeast Japan with a population of 1,500, a commitment to zero waste, and, consequently, 34 categories of recycling. Practicing what the town preaches, the Tokyo architect Hiroshi Nakamura incorporated a wide variety of discovered or discarded items into his design. Arranged linearly, the building holds the beer factory at its easternmost end, followed by the shop and then the pub, whose windowed west wall fills the space with natural light. This facade is made of 71 windows salvaged from abandoned houses and installed in two layers for insulation. Elsewhere, derelict farm equipment is reborn as furniture, empty bottles suspended overhead become a chandelier, and deer antlers serve as handles for the draft beer taps. Says Nakamura, "The histories and memories of these irregularly shaped objects make them precious."

Naomi R. Pollock, AIA

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